

# YAMNAYA INTERACTIONS

PROCEEDINGS OF  
THE INTERNATIONAL WORKSHOP  
HELD IN HELSINKI, 25–26 APRIL 2019



*Edited by*  
*Volker Heyd, Gabriella Kulcsár*  
*and Bianca Preda-Bălănică*



ARCHAEOLINGUA

THE YAMNAYA IMPACT ON PREHISTORIC EUROPE



# ARCHAEOLOGIA

Edited by  
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Volume 43

THE YAMNAYA IMPACT ON PREHISTORIC EUROPE

Volume 2

Series editor  
VOLKER HEYD





# **YAMNAYA INTERACTIONS**

## **Proceedings of the International Workshop held in Helsinki, 25–26 April 2019**

Edited by  
Volker Heyd, Gabriella Kulcsár, and Bianca Preda-Bălănică



**BUDAPEST 2021**

The publication of this volume was funded by the University of Helsinki and the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation program, under grant agreement no. 788616 – The Yamnaya Impact on Prehistoric Europe (YMPACT).



*Front Cover*

Mogila-‘Golemiyat Kayryak’ 2021, graves 14 and 16;

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A special thanks to Stefan Alexandrov, Sofia

*Back Cover*

Workshop participants before dinners on April 25 and April 26, 2019;

Photo: Bianca Preda-Bălănică

ISBN 978-615-5766-49-7

HU-ISSN 1215-9239

HU-ISSN 2786-2968

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2021

ARCHAEOLINGUA ALAPÍTVÁNY

H-1067 Budapest, Teréz krt. 13.

Cover design: Móni Kaszta

Copy editor: Bianca Preda-Bălănică

Desktop editing and layout by Rita Kovács

Printed by AduPrint Kft.

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## Interactions introduction

The very beginnings of the idea on a scientific workshop entitled ‘Yamnaya Interactions’ go back to the year 2017. In that year, the French-based UISPP (*Union Internationale des Sciences Préhistoriques et Protohistoriques*) announced its 18<sup>th</sup> Congress to take place in Paris during 4–9 June. Having already successfully collaborated on the EAA session ‘Transitions to the Bronze Age’ in The Hague in 2010 (HEYD – KULCSÁR – SZEVEÉNYI 2013), two of the editors, Volker Heyd and Gabriella Kulcsár, agreed to make another attempt in organising a session together, this time dedicated to the Yamnaya phenomenon, its importance only recently having sharply risen by the publication of two ancient DNA papers in *Nature* (ALLENTOFT *et al.* 2015; HAAK *et al.* 2015). Potential speakers were rapidly recruited and it turned out the idea of a session on Yamnaya in June in Paris was quite popular among contacted scholars. A session proposal was thus submitted. What happened then was – after a first acceptance and longer period of silence – a series of mishaps, mishandlings and misunderstandings by the organisers, which made the session idea collapsing soon, followed by apologies from the organisers to us and us to our already listed speakers. In the end, the session could not take place.

However, a good idea never dies and tides soon turned into another direction. In 2018, the ERC Advanced Project “The Yamnaya Impact on Prehistoric Europe – YMPACT” was granted as was its move to Helsinki confirmed soon afterwards. Bianca Preda-Bălănică joined the editing team and we began seriously planning the resurrection of the session from October 2018, now as a fully funded international workshop to take place on 25–26 April 2019, only four months after the official start of the YMPACT Project. A location was rapidly found thanks to the activities of several wonderful colleagues: The large lecture hall space of the Helsinki Collegium of Advanced Studies in Helsinki’s city centre, very close to Archaeology’s own premises at the University, offered perfect conditions for lecturing, listening, discussing, gathering over a coffee or a lunch plate, and in networking. Poster and abstracts booklet (can be found here: [https://www2.helsinki.fi/sites/default/files/atoms/files/yi\\_abstract\\_book.pdf](https://www2.helsinki.fi/sites/default/files/atoms/files/yi_abstract_book.pdf)) were assembled soon thereafter.

As with the UISPP session before, the workshop was intended to be organised by invitation only to make sure only latest research by the leading specialists on the topic of Yamnaya and 3<sup>rd</sup> millennium BC archaeology is represented. It was also decided purely on archaeological grounds that no geneticists or linguists being directly invited to contribute, although some archaeologists included results of both palaeogenetics and linguistics in their presentations. In doing so, two Yamnaya Interactions pathways were followed: A southern route, focusing in the regions west of the Black Sea, into the Balkans, Transylvania, Carpathian Basin, and Transdanubia; and a northern route, starting northwest of the Black Sea, pursuing the Yamnaya–Globular Amphora and Yamnaya–Corded Ware interactions, and following them deep into Central and Northeastern Europe. This way, the workshop aimed to provide as versatile and comprehensive as possible an overview of 3<sup>rd</sup> millennium BC transformations in Europe.

Overall, the workshop brought together scholars from 12 countries of Southeastern, Central, and Northern Europe giving altogether 15 presentations (initially 16 presentations were scheduled, however, David Anthony was unfortunately unable to attend) in two sessions, each covering a day. Each speaker was allocated 45 minutes that could be filled according to their own will, either 30 minutes presentations and 15 minutes of discussion, or even speaking for up to 40 minutes. The lectures were presented in pairs, followed by either coffee or lunch breaks thus allowing many discussions to informally take place. However, no final discussion was scheduled at either the end of the first or the second day.

Apart from the invited speakers and Helsinki archaeology colleagues in attendance, researchers from other countries found their way to Finland to follow the conference. Niels Nørkjær Johannsen



# Yamnaya Interactions

University of Helsinki, Collegium Common Room, 25th–26th April 2019

Our workshop goes back to the original Yamnaya westwards expansion from c. 3000 BCE, and intends to explore and assess their interactions with contemporary societies; from direct exchanges to indirect cultural, societal, economic and ideological transmissions across half of the European Continent. It will be following two pathways: A southern route focussing on the regions west of the Black Sea, i.e. Balkans, Transylvania, Carpathian Basin and Transdanubia; and a northern route, starting northwest of the Black Sea and pursuing the Yamnaya – Globular Amphora – Corded Ware interactions, and following them deep into central and northern Europe.

## Day 1 - Session 1 The Southern Route of Interactions

David Anthony, USA  
Bianca Preda, Finland  
Volker Heyd, Finland  
Stefan Alexandrov, Bulgaria  
Alin Frînculeasa, Romania  
Florin Gogâltan, Romania  
Lorenc Bejko, Albania  
Gabriella Kulcsár, Hungary  
János Dani, Hungary  
Jozef Bátora, Slovakia

## Day 2 - Session 2 The Northern Route of Interactions

Kristian Kristiansen, Sweden  
Johannes Müller, Germany  
Marzena Szmyt, Poland  
Martin Furholt, Norway  
Piotr Włodarczak, Poland  
Aivar Kriiska, Estonia  
Kerkko Nordqvist, Finland  
Elke Kaiser, Germany  
Michal Ernée, Czech Republic  
Jaroslav Peška, Czech Republic

### Day 1 - Session 1: The Southern Route of Interactions

9:00 – 9:15 Welcoming by Volker Heyd (& Bianca Preda, Kerkko Nordqvist)  
9:15 – 10:00 David Anthony  
*The genetic and cultural origins of the Yamnaya culture in the Eneolithic (5th millennium BC) Volga steppes*  
10:00 – 10:45 Bianca Preda & Volker Heyd  
*The Yamnaya impact on southeastern Europe*  
10:45 – 11:15 Coffee break  
11:15 – 12:00 Stefan Alexandrov  
*4th - 3rd millennium BC barrow graves between Danube river and Rhodope mountains*  
12:00 – 12:45 Alin Frînculeasa  
*Burial mounds in the Lower Danube region – from the international to the local and the other way round*  
12:45 – 14:00 Lunch break  
14:00 – 14:45 Florin Gogâltan  
*Transylvania. Within or outside of the Yamnaya world*  
14:45 – 15:30 Lorenc Bejko  
*Interactions in the Albanian Early Bronze Age: evidence for Yamnaya connection?*  
15:30 – 16:00 Coffee break  
16:00 – 16:45 Gabriella Kulcsár & János Dani  
*Yamnaya interactions in the Carpathian Basin*  
16:45 – 17:30 Jozef Bátora  
*Penetration of the Yamnaya culture into North-Carpathian region: preliminary knowledge*

### Day 2 - Session 2: The Northern Route of Interactions

9:00 – 9:45 Kristian Kristiansen  
*Pandemics, migrations, genes, culture and genocide: towards a new Eurasian prehistory that we may not like*  
9:45 – 10:30 Johannes Müller  
*Yamnaya, Globular Amphorae and Corded Ware identities*  
10:30 – 11:00 Coffee break  
11:00 – 11:45 Marzena Szmyt  
*Yamnaya and Globular Amphora culture relationships: facts and gaps*  
11:45 – 12:30 Martin Furholt  
*Re-integrating archaeology into the 3rd millennium BC migration debate. How outdated concepts and classification blur the aDNA results*  
12:30 – 13:45 Lunch break  
13:45 – 14:30 Piotr Włodarczak  
*Eastern impulses in cultural and demographic change during the ending southeastern Polish Eneolithic*  
14:30 – 15:15 Aivar Kriiska & Kerkko Nordqvist  
*Wagon trails through the bogs? Corded Ware interactions in the eastern Baltic Sea region*  
15:15 – 15:45 Coffee break  
15:45 – 16:30 Elke Kaiser  
*Interactions between Eastern European steppe and Central Europe in the 3rd millennium BC – an archaeological perspective*  
16:30 – 17:15 Michal Ernée & Jaroslav Peška  
*The early Corded Ware horizon in the Czech Republic: cases from Bohemia and Moravia*







from Aarhus University, Denmark, was one of them and we thank him for his interest in coming and discussing with us. We also like to emphasise here Yoan Diekmann and Jens Blöcher from the Institute of Organismic and Molecular Evolutionary Biology, Johannes Gutenberg-Universität Mainz, Germany, being a partner in the YMPACT project, as well as Martin Trautmann and Maxime Brami who both ended up contributing to the volume. Mark Thomas from University College London, UK, also joined as a partner in the project (because he had missed YMPACT's Ice-Breaker two months earlier). He turned out to be the only geneticist and was vividly contributing to the discussions.

The workshop unfolded, after a brief welcoming and introduction by the organisers, with the session of the first day dedicated to Yamnaya migrations along the river Danube. The presentations were rich in displaying burial evidence and material culture of Yamnaya kurgans, especially from Bulgaria and Romania, highlighting dozens of new graves and related finds. From the very beginnings, these lectures triggered intense discussions that continued throughout the two conference days, mainly revolving around the cultural definition of Yamnaya, or simply the question of what is Yamnaya after all? These debates well reflected archaeological tensions between overwhelming burial customs information and little material culture evidence, spiced with the new ancient DNA finding of 'Yamnaya Ancestry' haunting everyone's mind. They left little room for the usual topics of chronology, periodisation and internal development to play any significant role. Nonetheless, lectures of the first day stressed how much progress Yamnaya research experienced in the last 10 years: 1) Dozens of new graves were published, and many more's plans, drawings and photos are still awaiting 'daylight' in articles and books; 2) from about a dozen radiocarbon dates available for the southeast European branch of Yamnaya in Romania, Bulgaria, Serbia, and Hungary some 10 years ago (HEYD 2011), and about 40-50 for a little more than five years ago (FRÎNCULEASA *et al.* 2015), to around an estimated 150 radiocarbon dates available nowadays, and rising; and 3) Yamnaya graves and related burials are now also known from more remote regions, representing no longer only the flatlands of Southeast Europe, but Albania and Slovakia, and perhaps Turkey. Despite these doubtless successes, many gaps still existing in archaeological records need to be underlined. Without these filled, a better overall understanding will never be achieved.

The topic of interactions only became prominent in the second day, with Globular Amphora and Corded Ware cultures entering the arena when the northern route of 'Yamnaya Ancestry' transmission

was put in the foreground in presentations and discussions. Here, a seemingly very different process unfolded some 5,000 years ago with Yamnaya kurgans and their graves rapidly disappearing from records when leaving behind the steppe/forest-steppe regions and entering the temperate woodlands of Central and Eastern Europe. Burial custom and material culture intrusions are nevertheless recognisable in much wider geographical extent and even become the dominant trait in the centuries after the transition from Funnel Beakers (TRB), Globular Amphora and Comb Wares to Corded Wares. Differences in the perception of interactions between southern and northern route are no doubt also linked to two completely different archaeological traditions within which these graves are currently studied: On the one hand, the cultural-historical paradigm which is still a deeply rooted approach in eastern and southeastern European archaeology while, on the other hand, western European processual approaches are constantly challenging it. Yet, and this is the big difference if our workshop would have been held some 10 years ago, the matter has somehow moved beyond this decade-long and unresolved dispute of archaeological schools and traditions, again partially due to archaeogenetics coming into play. In a kind of circuit, this leads us back to our starting point of how one can define an archaeological culture, Yamnaya particularly, at the age of genetics. We will come back to this question at the very end of this volume. Although more settled now in 2021 than in 2019, finding a common language between archaeologists and geneticists; finding a middle way between the broad-brushed genetic messages versus the more fine-scaled archaeological conclusions; and finding a consensus between those archaeologists in favour of the new biological data and those being more reluctant in seeing anything good in them, was a hot topic then, still is, and will be with us for a longer while.

Many debates of the then conference are well visible in the 20 contributions of the herewith presented ‘Yamnaya Interactions’ proceedings. Yamnaya definition, migrations, identity; and interactions with local societies and cultures in the late 4<sup>th</sup> and much of 3<sup>rd</sup> millennium BC Europe still dominate discussions and considerations. The addition of more and more genetic data, increasing dramatically every year, has not resolved these big questions. On the contrary, one gets the impression it has only complicated the overall picture. Their results are nevertheless in everyone’s mind and constantly influence our way of thinking about past events. As it was three years ago, we cannot just ignore them but will have to make our own peace in order to reconcile them with our archaeological records and interpretations.

As a further continuity, our conference sessions of the two days remained intact and now form Part #2 and Part #3 of the volume, titled *Interactions south of the Carpathians and along the river Danube* and *Interactions north of the Carpathians and into the Corded Ware*, respectively. Having approximately the same number of chapters, both their sequences roughly follow the geography from east to west across the Continent. However a Part #1, called *Transformative dynamics of the fourth/third millennium BC*, had to be added. This is in parts due to some extra contributions, which did not fit either of the sessions, were included, like the two papers on Marija Gimbutas – and by the way, this year is the centenary of her birthday. But original contributions also changed course, partially guided by the debates during the workshop, partially influenced by later publications and new concepts, partially influenced by ancient DNA results, and we acknowledge and of course welcome these new ideas.

At the end of this long journey, two-and-a-half years after the then workshop, we will not forget to take the opportunity to express our gratefulness to all colleagues and friends who contributed to the success of the conference and the materialisation of this volume by offering us their support. Firstly, we would like to thank all the speakers of the workshop, now turned authors of this volume who sent their contributions to these proceedings in time. Particular credit goes to our colleague in archaeology at Helsinki, Elisabeth Holmqvist-Sipilä, then core fellow of the Helsinki Collegium of Advanced Studies, along with its director, Tuomas Forsberg, and admin staff, for giving us access to this wonderful lecture hall space for conferencing, discussing, and interacting. Kerkko Nordqvist was involved in various organisational



tasks of the workshop, as was Marja Ahola, who subsequently also wrote a review in Finnish language (<https://kalmistopiiri.fi/2019/05/27/international-workshop-yamnaya-interactions-25-26-4-2019-hautatutkimusta-eurooppalaiseen-tapaan/>), thus reaching out to a wider non-specialist audience. Taru Auranne, then project coordinator, handled flights and accommodation for the conference guests, and Wesa Perttola, another colleague in archaeology, helped us with transportation from the airport. The then Helsinki undergraduates Tia Niemelä (now M.A.), Alexander Suvorov and Tomi Kuljukka (both soon to be M.A.) offered their assistance in putting together all info materials in the days before the conference and in attending to the needs of the guests during conference days. Alexander Suvorov and Tomi Kuljukka were subsequently also taking part in the editing process of this volume by primary text corrections and checking for accuracy of references and literature. They, and Monique Horstmann, who also edited complete contributions, deserve our full gratitude. Finally, we would like to thank Erzsébet Jerem and Kyra Lyublyanovics from the Archaeolingua Foundation, Budapest, for their excellent final editing work and for making possible the first-rate printing of this volume. Particularly Kyra was always ready to answer questions on our part, but also pointed out discrepancies on her own. Only this quick exchange with the editors made it possible for the book to be published so speedily when other YMPACT project tasks were already looming.

This is the second volume of the monograph series ‘The Yamnaya Impact on Prehistoric Europe’ which deals with the testimonies of the Yamnaya people, their culture and legacy in Southeastern Europe and beyond. Following a material edition in Volume 1, we are pleased for this volume to be a publication of conference proceedings comprising scholarly articles around a major Yamnaya topic. It will be very welcome when this nice balance can be maintained in future YMPACT volumes.

### A special dedication

A few months after the ‘Yamnaya Interactions’ workshop was held in Helsinki at the 25–26 April, 2019, Professor emeritus **Richard J. Harrison** turned 70 years old. Although invited, he was unfortunately unable to take part. His participation however unfolded in a very different way in that he agreed to take over the peer-reviewing of all contributions of this volume. The editors are immensely grateful for him having taken this role. But more importantly, many contributions and the book as a whole very much benefitted from his immense knowledge of prehistoric archaeology and his sharp mind. We would therefore dedicate this volume to him as a belated celebration present for his then 70<sup>th</sup> birthday.

Helsinki & Budapest, in August 2021

Volker Heyd, Gabriella Kulcsár & Bianca Preda-Bălănică  
The Editors

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## **PART #1**

**Transformative dynamics of the fourth/third millennium BC**



# Early Yamnaya chronology and origins from an archaeological perspective

DAVID W. ANTHONY

## Abstract

*This study reviews the chronologies connected with the earliest phase of the Yamnaya culture, focusing on the dated settlements of Mikhailovka II and Repin, which have radiocarbon dates earlier than 3000 BC (4350 BP). After the initial definition of the Yamnaya culture in 1907 the early Yamnaya phase was assigned to different chronological periods (Late Neolithic, Eneolithic, Early Bronze Age) and different absolute dates (beginning 3800, 3300, or 3000 BC). Seven radiocarbon dates from early Yamnaya components at three Yamnaya settlements (Repin, Mikhailovka II, and Generalka 2) and 43 radiocarbon dates from early Yamnaya individuals from 27 kurgan cemeteries distributed across the Pontic-Caspian steppes are older than 4350 BP, with calibrated averaged midpoints between 3203–3107 BC. These dates suggest that early Yamnaya sites and assemblages began to appear about 3300–3200 BC, paired with a new nomadic settlement pattern and a newly simplified animal-protein pastoral diet, as indicated by milk peptides and stable isotopes in Yamnaya teeth and bones. Late Yamnaya, correlated with Mikhailovka level III, is dated 3000 BC and later. Only 10–20% of Yamnaya radiocarbon dates fall into the early 3300–3000 BC range, so it seems that most Yamnaya sites are late Yamnaya. Fully nomadic communities were scattered across the Pontic-Caspian steppes from the Ural River to the eastern Carpathians at a low density during the early Yamnaya phase. Unoccupied spaces in the steppe landscape were rapidly filled by pastoralists during the late Yamnaya phase after 3000 BC, when Yamnaya communities expanded eastward to the Altai and westward to Hungary.*

**Key words:** radiocarbon dating, freshwater reservoir effect, pastoralist diet, migration, steppe landscape, expansion, late 4<sup>th</sup> millennium BC

Regional and chronological variation in Yamnaya material culture is so widely acknowledged in Eastern Europe that it is frequently asked if Yamnaya qualifies as an archaeological culture. In Soviet academic terms an ‘archaeological culture’ was a ‘culture-historical community’, a social entity bound together by a shared history and material culture, especially shared ceramic types. Russian and Ukrainian archaeologists agree that Yamnaya ceramic types were eclectic and varied (RASSAMAKIN 1999; IVANOVA 2006; SHISHLINA 2008; MORGUNOVA 2014). Many traits typical of older regional Eneolithic pottery styles survived into the Yamnaya period—Berezhnovka/Khvalynsk traditions on the Volga, Repin on the Don, Sredni Stog on the Dnieper, Budzhak in the Dniester-Danube steppes; and the ceramics of other cultures (late Maykop, Trypillia C2, Globular Amphorae, Corded Ware, late Coțofeni) also appeared in Yamnaya graves (NECHITAILO 1991; TELEGIN – PUSTALOV – KOVALYUKH 2003; IVANOVA 2013). For S. IVANOVA (2006), the absence of a shared ceramic type meant that Yamnaya was not a proper archaeological culture (or cultural-historical community) but rather was closer to an ideology, probably a religion since its shared traits were manifested primarily in the funerary ritual sphere. While acknowledging the regional variation in Yamnaya ceramics, one might also point to shared metal types (tanged daggers and sleeved axes), personal ornaments (bone pins, silver hair rings), and lithics (projectile point types), in addition to the shared funerary rituals that Ivanova discussed. On the other hand, RASSAMAKIN (2013) argued that Yamnaya variability was not only regional, but also chronological: he cut off much of what

some regarded as the early Yamnaya phase, which he assigned to a distinct Eneolithic archaeological culture, the Repin culture.

Among western archaeologists an opposite conception of Yamnaya is often encountered. FURHOLT (2019, 116) criticized western geneticists and archaeologists for assuming that Yamnaya represented "...a monothetic structure regarding the burial rituals, pottery styles, subsistence strategies, social identities, and biological proximity..." of the Yamnaya population. Furholt had in mind the broad generalizations of Gimbutas's 'Kurgan Culture' (FURHOLT 2014). But eastern European archaeologists have consistently seen heterogeneity in the archaeological footprint of the Yamnaya culture. The emerging evidence from ancient DNA, suggesting that the people buried under Yamnaya kurgans were highly inter-related, shared a narrow, homogeneous genetic ancestry, and formed a tight cluster in PCA space (WANG *et al.* 2019, 6), conflicts rather than agrees with the archaeological evidence for regional diversity in Yamnaya material culture.

Disagreements over how to define the Yamnaya culture (or phenomenon) are inevitably linked to disagreements over how to date it. Western archaeologists might be puzzled by chronologies by well-regarded experts with starting dates for Yamnaya almost a millennium apart, 3800 BC for N. Morgunova and 3000 BC for Y. Rassamakin (RASSAMAKIN 2013; MORGUNOVA 2014; MORGUNOVA – KHOKHLOVA 2013). Each cited dozens (MORGUNOVA 2014) or even hundreds of radiocarbon dates (RASSAMAKIN – NIKOLOVA 2008), so their disagreement was not caused by uncertainty about chronological dates, but about the events and attributes that defined the Yamnaya culture. Some western specialists adopted Rassamakin's low chronology, in which Yamnaya began about 3000 BC (KAISER 2010; MILETO *et al.* 2018; HARPER *et al.* 2019), without acknowledging that this date was linked to a debated interpretation of Yamnaya chronology. Other western projects used an intermediate chronology, in which Yamnaya began about 3300 BC (WANG *et al.* 2019; WILKIN *et al.* 2021), again possibly without intentionally choosing to support a specific theory. No western team has yet adopted Morgunova's high 3800 BC chronology but that might be just a matter of time. These absolute dates intersect the lines between chronological periods in various unresolved ways. Western-led scientific teams have recently assigned the early Yamnaya phase to the Middle Bronze Age (KNIPPER *et al.* 2020), the Early Bronze Age (WANG *et al.* 2019), and the Eneolithic (MILETO *et al.* 2018).

This essay is meant to defend a reasonable absolute date for the beginning of the Yamnaya phenomenon through a review of radiocarbon dates for the early Yamnaya period. Before reviewing radiocarbon dates, I briefly identify the events that for me define the beginning of Yamnaya—the beginning of what? I state at the outset that our Russian and Ukrainian colleagues are the specialists in this subject. Dorcas Brown and I have excavated with colleagues at Eneolithic and Bronze Age sites in Ukraine at Razdolnoe (KOTOVA *et al.* 2017) and in Russia around Samara (ANTHONY *et al.* 2016a), and we studied museum collections (ANTHONY – BROWN 2011), but I must ask the real specialists to be patient with my comments on this intensely debated topic.

In my view (ANTHONY 2007; ANTHONY *et al.* 2016a) the Yamnaya culture is defined primarily by its unprecedented mobility, and by the new skills, political institutions, and religious ideologies (agreeing with Ivanova) necessary to maintain that innovation—not by a shared pottery style. The archaeological signatures of Yamnaya mobility included the abandonment of dozens of stratified river-valley Eneolithic settlements across the Pontic-Caspian steppes, the appearance of a few Yamnaya kurgan cemeteries in the previously unexploited plateaus between the major river valleys, the appearance of wheeled vehicles as mortuary symbols in Yamnaya graves, and a significant shift in human diets from riverine to grassland and dairy resources as documented in stable isotopes in human bone (SHISHLINA *et al.* 2009; SCHULTING – RICHARDS 2016) and in dairy peptides in dental calculus (WILKIN *et al.* 2021).

These changes together represented a significant shift in where and how people lived on the steppe landscape. A few Yamnaya kurgan cemeteries appeared in the open steppe plateaus between the river valleys, the first human monuments in those environments (SHILOV 1985). Non-riverine grasslands represent the major landform of the Eurasian steppe landscape, but during the Eneolithic they were almost unexploited. Eneolithic settlement sites are well documented in riverine ecological settings in the Volga-Ural steppes (VYBORNOV *et al.* 2018; MORGUNOVA 2015; 2017; SHISHLINA *et al.* 2018), but Yamnaya settlements cannot be identified in the same places anywhere east of the Don River—all the Eneolithic riverine sites in the Volga-Ural steppes, a huge region, were abandoned. Settlement sites declined in frequency but did not disappear in the western Yamnaya region in Ukraine, but even there the cultural landscape shifted archaeologically from Eneolithic settlements-with-cemeteries to mostly just kurgan cemeteries.

Dietary isotopes from Yamnaya bones in the middle Volga steppes in the eastern Yamnaya region (SCHULTING – RICHARDS 2016) and in the lower Don steppes (SHISHLINA *et al.* 2018) show a change in human diets from primarily C3, riverine forest resources such as deer and fish during the Eneolithic to a mixture of C3 and C4, grassland-adapted resources in Yamnaya individuals (SHISHLINA *et al.* 2018; KNIPPER *et al.* 2020). The human isotopic results could be explained (SCHULTING – RICHARDS 2016, 143) “...if it is assumed that sheep milk and meat contributed the majority of the protein in Bronze Age human diets...” in the Volga-Ural steppes. Wilkin’s study of milk peptides in human dental calculus in the Volga-Ural steppes found no milk peptides in Eneolithic teeth, so no evidence for dairying, although cattle, sheep, and goats were eaten; but abundant milk peptides in Yamnaya teeth, including genus-specific peptides from cow, sheep-goat, and horse milk. Dairy foods were suddenly ubiquitous in the Yamnaya period (WILKIN *et al.* 2021). Horse milk was consumed by at least two Yamnaya herders at the Krivyanskyi IX kurgan cemetery in the lower Don steppes, one in kurgan 4 grave 21A, dated 3345–3096 cal BC (*Table 1*), and the other in kurgan 2 grave 2, dated 2881–2633 BC (WILKIN *et al.* 2021). An accidental archaeological benefit of these dietary changes is that radiocarbon dates on Yamnaya human bones are more accurate because the Yamnaya diet in most places did not include a lot of fish, which can cause freshwater reservoir effects (FRE) if they make up a large part of the human diet, as in most Eneolithic riverine diets.

This package of changes is consistent with the hypothesis that the Yamnaya culture either: 1. invented pastoral nomadism; or, 2. was the first to fully exploit the invention of pastoral nomadism in the Eurasian steppes, as argued earlier in different ways by SHILOV (1975; 1985), MERPERT (1974), and SHISHLINA (2008, 230–236). The new nomadic economy was made possible by the introduction of wagons that could transport water, firewood, tents, food, and other domestic needs; and by horseback riding, which tripled the number of animals a single Eurasian steppe herder could manage (KHAZANOV 1994 [1984], 32), making possible a surplus of cattle and sheep that could be used for political purposes (ANTHONY 2007). I also agree with SHISHLINA (2008) that Yamnaya nomadic pastoralism differed significantly from historic steppe nomadic pastoralism. It was a novel kind of economy in 3000 BC, and it remains a challenge to understand it now without relying on anachronistic Central Asian analogies from historic nomads who competed with centralized states and empires, absent in the Yamnaya context.

The explosive growth of the Comanche ‘empire’ in the American Plains (HÄMÄLÄINEN 2008) might be a more useful analogy for understanding the Yamnaya expansion, because the Comanche, like Yamnaya, were the first tribe of the North American grasslands to *fully* commit to a nomadic economy, an innovation that led directly to their rapid military, political, linguistic, and demographic expansion. In 1725, when they began to invent a nomadic bison-hunting economy based on horseback riding, there were some 1,500–2,000 Comanches (rough estimate); by 1750 there were 10,000–15,000; and in the 1780s, before smallpox, there were probably 40,000 (HÄMÄLÄINEN 2008, 66, 102–104). Their



cultural influence on other grassland tribes extended to religious ceremonies, military societies, clothing, accessories, hairstyles, weaponry, and, notably, language. "...To contemporary Euro-Americans the most illuminating sign of the Comanche's cultural power was the spread of their language across the Southwest and the Great Plains..." (HÄMÄLÄINEN 2008, 171). The Comanche recreated the midcontinent in their own image in 50 years, and this was made possible by a profound economic shift in how the grasslands were exploited.

The Yamnaya economic-ritual community enjoyed a decisive advantage in the Pontic-Caspian steppes, like the Comanches in America, because they were the first to exploit the vast reserves of bioenergy stored in the Eurasian grasslands. The Yamnaya nomadic community used cattle, sheep, goats, and horses to convert the bioenergy of the Eurasian steppes into a simplified human diet focused on meat and milk proteins, much simpler than the mixture of fish, wild game, and domesticated animals seen in Eneolithic riverine diets. This total dietary reliance on the meat and milk of a few species of domesticated animals, combined with the double role of cattle and horses as both food sources and trained transport animals, changed the cultural value of domesticated animals, with far-reaching consequences first explored by Sherratt (1983; 2006). The attempt by Yamnaya nomads to spread their economy and political system beyond the steppes then contributed to significant changes in the relationship between the possession of trained traction animals, the use and value of land, and the development of persistent social hierarchies in Bronze Age Europe (BOGAARD – FOCESATO – BOWLES 2019).

Yamnaya material culture can also be defined by innovations in metallurgy (bivalve molds, arsenical bronze, mining, smelting, tanged daggers, sleeved axes) that began to spread across the steppes *before* the revolution in Yamnaya mobility (KLOCHKO 2019), and continued to intensify during the Yamnaya era, events that provide some typological signals for early Yamnaya. But we cannot discuss these changes until the chronology of the Yamnaya phenomenon is clarified. The 4<sup>th</sup> millennium BC was a busy era in Eastern Europe. To understand the context in which Yamnaya nomadism evolved, we need to know *when* it first appeared. And we should attempt to agree about its chronological period, so that when we refer to the difference between the 'Eneolithic' and the 'Early Bronze Age' steppe economies, as I did, we can be certain which one is meant to be associated with Yamnaya.

### **The Yamnaya culture and its chronological period: Eneolithic or Bronze Age?**

The Yamnaya or Pit-Grave<sup>1</sup> culture was first defined by V. A. GORODTSOV (1907). His excavations in 1901 and 1903 in kurgans around Kharkhov on the upper Donets River in the northern steppes of Ukraine established the stratigraphic sequence of three grave types (Pit-Grave, Catacomb-Grave, and Timber-Grave) that initially framed the Bronze Age in the Pontic-Caspian steppes. The Pit-Grave (or Yamnaya) culture defined the Early Bronze Age (EBA); the Catacomb culture represented the Middle Bronze Age (MBA); and the Timber-Grave (or Srubnaya) culture represented the Late Bronze Age (LBA). EBA Pit-graves were in simple pits, MBA Catacomb-graves (usually) were in a niche (or catacomb) dug into one wall of the pit, and LBA Timber Graves were in pits roofed with timber logs (or with bundles of reeds that resemble decayed logs). All were covered by kurgans. Although this sequence is recognized today as simplistic (to give just one example: grave pits with a niche on one side first appeared in the Eneolithic, as at Giurgiulești), nevertheless it is accepted as a chronological framework. What the sequence represents culturally – evolution, migration, technological shifts – is debated, so this is not necessarily a culture

<sup>1</sup> 'Yamnaya' is the genitive plural of 'yama', meaning 'pit'. The 'culture of the pits [or pit-graves]' is 'yamnaya kul'tura'.



history, but a shared chronological nomenclature. Its connection with the Bronze Age has been debated since Gorodtsov first interpreted the three-part sequence as spanning the Bronze Age.

In 1907 the Bronze Age was just beginning to be conceptualized in Eastern Europe (HEYD 2013). Before World War II and for decades after, the affiliation of Gorodtsov's three phases with the Bronze Age depended on connections with the civilizations of the Caucasus, the Aegean, and Anatolia, where historical dates anchored pre-radiocarbon chronologies (ROSTOVTSEFF 1922; GIMBUTAS 1956, 89–92; KUZMINA 1980). The paucity of metals in Yamnaya graves contrasted with the wealth of bronze weapons and tools in the emerging Bronze Age cultures of Europe, the Aegean, the Caucasus, and even in Catacomb-culture graves in the steppes. Two English-language syntheses of Soviet research of the 1950s and 1960s described Yamnaya as a Late Neolithic culture, in accordance with the few Yamnaya metal objects then published (GIMBUTAS 1956, 89–92; SULIMIRSKI 1970, 127–136). In the three-volume prehistory of the Ukrainian RSR issued in 1971, the first volume, edited by a young D.Y. Telegin, categorized early Yamnaya as Eneolithic. But late Yamnaya was the transition to the Early Bronze Age, and the Catacomb culture was assigned entirely to the Bronze Age (TELEGIN *et al.* 1971, 263–281).

Later in his career Telegin revised this nomenclature and defined early Yamnaya as EBA and Catacomb as MBA, as Gorodtsov had proposed (TELEGIN *et al.* 2001, Figure 61 chronological chart). He compiled 210 radiocarbon dates that indicated a beginning date for Yamnaya of about 3300–3000 BC, and a considerable overlap in radiocarbon dates of EBA Yamnaya and MBA Catacomb graves between 2800–2400 BC (TELEGIN – PUSTALOV – KOVALYUKH 2003). This EBA/MBA overlap shows that the innovations in pottery style and metal types that defined the MBA began in one or two regions and then spread gradually. During these centuries EBA and MBA refer to contemporary cultural choices in the North Pontic steppes, not distinct chronological periods.

N. I. MERPERT (1974) produced the first modern synthesis of the Yamnaya culture in a classic study titled (in Russian) *The Most Ancient Stockbreeders Between the Volga and Ural Rivers*. His theory that Yamnaya evolved first in the lower Volga-Ural steppes (*Fig. 1*, region I) strongly influenced M. Gimbutas's conception of the Kurgan Culture (ELSTER 2015). Merpert equated the Yamnaya culture with EBA cultures such as Troy II. But he also argued that the oldest phase of Yamnaya on the lower Volga went back to the Eneolithic, contemporary with the Eneolithic Sredni Stog culture in Ukraine. Only later, in Merpert's second phase, did Yamnaya spread westward into Ukraine, an expansion that marked the beginning of the EBA (*Fig. 1*). Merpert's Yamnaya had Eneolithic roots on the Volga but expanded in the EBA.

Merpert assigned 18 kurgans (22 graves) to his Eneolithic phase I on the lower Volga. His phase II kurgans, for example Bykovo II, kurgan 2, grave 3, contained ceramic types like the ceramics at the Repin site on the lower Don and at Mikhailovka level II in Ukraine. The Repin phase in his system was the period when Yamnaya spread westward across the steppes. Mikhailovka, a stratified settlement on the lower Dnieper excavated in the 1950s (LAGODOVSKAYA – SHAPOSHNIKOVA – MAKAREVICH 1962), had three successive phases of occupation (I, II, and III). Merpert interpreted all three phases as contemporary with Yamnaya, with I representing a local Eneolithic Dnieper culture contemporary with the oldest Yamnaya phase on the lower Volga, while Mikhailovka II represented the EBA expansion of early Yamnaya westward into Ukraine, and III represented late Yamnaya. The excavators of Mikhailovka also interpreted stratum I as a pre-Yamnaya Eneolithic culture (today known as the Lower Mikhailovka culture), stratum II as early Yamnaya, and III as late Yamnaya (LAGODOVSKAYA – SHAPOSHNIKOVA – MAKAREVICH 1959; 1962). The stratified sequence of cultural deposits at Mikhailovka remains today a rock of data in the river of arguments about Yamnaya chronology.

TELEGIN (1973) disagreed with Merpert's oldest Yamnaya phase on the lower Volga and argued instead that the oldest phase of the Yamnaya culture was no older than Mikhailovka II, a position many



Fig. 1. The nine regional groups (I-IX) of the Yamnaya culture defined by N. Y. MERPERT (1974, Figure 1). In his legend, a = documented border of a culture region; b = supposed border of region; and c = direction of invasion of other culture areas. He argued that the oldest Yamnaya phase was in group I on the lower Volga

archaeologists support today. Telegin observed typological continuity between Mikhailovka I and II in ceramics and lithics, supporting his hypothesis that Yamnaya evolved in Ukraine from a Sredni Stog-like background, not only on the lower Volga. He agreed with Merpert that early Yamnaya Mikhailovka II was contemporary with the single-level Yamnaya settlement at Repin on the Don, as noted first by SINITSYN (1957) and LAGODOVSKAYA *et al.* (1962). The distinctive cord- and comb-impressed, thick-walled pottery style of Repin was present as a minority type (less than 10% of estimated whole vessels according to KUZNETSOV 2013, 19) among Mikhailovka level II ceramics but not in the ceramics of I or III. Mikhailovka II and Repin were contemporary and represented the earliest phase of Yamnaya, according to TELEGIN (1973).

In the early 1980s most late-Soviet-era archaeologists still placed early Yamnaya in the late Eneolithic. The 20-volume series *Archaeology of the SSSR*, published by the Institute of Archaeology in Moscow, issued its Eneolithic volume in 1982 (MASSON – MERPERT 1982), ending with a surprisingly brief article on Yamnaya, as if it had been added to the Eneolithic volume at the last minute. The Catacomb culture was again discussed in a separate Bronze Age volume. Volga archaeologist Igor VASILIEV (1981) also placed the earliest phase of Yamnaya in the Eneolithic on the lower Volga.

This practice began to shift as more metal artifacts were recovered from Yamnaya graves, and specialists began to study Yamnaya metallurgy and its similarities to Maykop metallurgy (KORENEVSKII 1980; VASILIEV 1980). In the 1970s E. N. Chernykh's studies of metals and metallurgy from hundreds of sites across the steppes and the North Caucasus showed that Yamnaya and Maykop metals belonged to

the same era and industries, designated the Circumpontic Metallurgical Province (CHERNYKH 1992, 67–83). Maykop had been regarded as a mid-to-late 3<sup>rd</sup> millennium culture with metals like Alaça Höyük in central Anatolia. But ANDREEVA (1977) argued that the southern analogies of Maykop were with the Late Uruk phase, a millennium earlier than Alaça Höyük. Throughout the 1980s, new radiocarbon dates supported a 4<sup>th</sup>-millennium BC chronology for Maykop, contemporary with Late Uruk (KORENEVSKII 1980; CHERNYKH 1992, 67–83; MUNCHAEV 1994, 160). Maykop today is regarded as the extreme northwestern frontier of sites displaying material and technological links with the ‘Uruk Expansion’ trade network of the West Asian EBA in the late 4<sup>th</sup> millennium BC (KOHL 2007; KOHL – TRIFONOV 2014; KORENEVSKII 2016; HELWING 2016).

Chernykh’s Circumpontic Metallurgical Province equated early Yamnaya and late Maykop metals as related industries within the EBA, and many archaeologists began to accept this periodization for Yamnaya (KORENEVSKII 1980; NECHITAILO 1991; CHERNYKH 1992, 83–93; TELEGIN – PUSTALOV – KOVALYUKH 2003). Two-sided bivalve molds, tanged daggers, flat axes, and single-bladed ‘sleeved’ shaft-hole axes were new metal tool types in the steppes, borrowed from late Maykop (Klady-phase) technology but produced in Yamnaya forms, that today partly define the Yamnaya culture in the steppes. Some of these new types began to spread across the steppes in the Eneolithic (KLOCHKO 2019). Maykop metallurgists also introduced arsenical bronze to the steppes, although there was more arsenical bronze in Yamnaya metallurgy in Ukraine and at Usatovo, west of Maykop, than in the Volga-Ural steppes, north of Maykop (CHERNYKH 2017, 175). In the Volga-Ural steppes most Yamnaya tools and weapons were made from ‘clean’ copper oxide ores mined by Yamnaya miners at Kargaly in the southern Urals (MORGUNOVA 2014, 293–314; CHERNYKH – ISTO 2002). According to Morgunova’s excavations at the Turganik Eneolithic settlement, not far from Kargaly, local smelting and metallurgical production of Kargaly copper began in a pre-Yamnaya stratigraphic level dated between 3600–3200 BC (MORGUNOVA 2017, 231).

Three aspects of Yamnaya metallurgy support an EBA designation for early Yamnaya: Yamnaya metal tools and weapons were typologically and technologically unlike the Eneolithic tools and weapons of Chernykh’s Carpatho-Balkan Metallurgical Province; they were derived from EBA Maykop metallurgical innovations; and copper mining and metallurgical production began in the steppes before the Yamnaya period, as at Turganik. In the last 20 years many prominent steppe archaeologists have adopted a chronology in which early Yamnaya, Mikhailovka II, Repin, Usatovo, and late Maykop (Klady) were contemporary during the late 4<sup>th</sup> millennium BC, and the beginning of the EBA is correlated with these sites and cultures (CHERNYKH 1992; TELEGIN *et al.* 2001, Figure 61 chart; TRIFONOV 2001: Table 1 chart; SHISHLINA 2008; KOHL – TRIFONOV 2014; REINHOLD *et al.* 2017; WANG *et al.* 2019).

Recently a group of ‘Steppe Maykop’ kurgan graves was defined in the steppe zone, between the Yamnaya and Maykop site clusters, that show hybrid blends of Maykop traits in ceramics and metal and Yamnaya traits in funeral ritual. Ancient DNA from a sample of these graves has shown them to contain the bones of a third population, previously unknown in the North Caucasus steppes, with West Siberian genetic affinities like the late-4<sup>th</sup>-millennium BC Botai population of Central Asian horse-riders (WANG *et al.* 2019). Their involvement in North Caucasus steppe prehistory was previously unsuspected, but they seem to have blended Maykop and Yamnaya material cultures while exchanging mates only rarely with either population. WANG *et al.* (2019) speculated that they might have been invited by Maykop chiefs to serve as a buffer between Maykop agro-pastoralists and emerging Yamnaya nomads.

Settlement stratigraphies on the lower Don show that during the final centuries of the Eneolithic, perhaps around 3500 BC, early Maykop groups expanded northward as far as the Don. Early Maykop pottery sherds and lithics were mixed with late Sredni Stog pottery and lithics in co-occupied settlement deposits stratified under ephemeral Yamnaya-Repin deposits at Razdorskoe and Konstantinovka on

the lower Don (KYASHKO 1987; NECHITAILO 1991, 22; ANTHONY 2007, 296–298). A wheel-made early Maykop sherd was found as far west as Mikhailovka I. The oldest radiocarbon dated wagon grave in the steppes was in a Steppe Maykop grave at Sharakhalsun (REINHOLD *et al.* 2017). Maykop innovations might have been carried into the steppes as far as the lower Don valley by Maykop people and their Steppe Maykop imitators during Mikhailovka level I. Late Maykop technologies, perhaps including wheeled vehicles, then were eagerly adopted and diffused across the steppes, and these innovations were fundamental parts of the Yamnaya revolution.

The early Yamnaya settlement components at Repin and Mikhailovka level II have been mentioned several times. Differing Yamnaya chronologies continue to exist partly because events at these two sites are interpreted differently. Their radiocarbon dates can help to establish an absolute chronology for the beginning of Yamnaya and the EBA in the Pontic-Caspian steppes.

### **The earliest Yamnaya phase according to radiocarbon dates**

The changing relationship between the Yamnaya culture and its chronological period, reviewed above, demonstrates that the definition of ‘Eneolithic’ or ‘Bronze Age’ is a matter of interpretation, as HEYD (2013) discussed more generally for eastern Europe. Absolute age should be easier to establish because it is determined by radiocarbon dates. The discussion below is about the absolute age of the oldest Yamnaya sites.

I suggest that the absolute age of the early Yamnaya phase should be correlated with the absolute age of the early Yamnaya settlements at Mikhailovka stratum II, Repin, and Generalka 2. The Mikhailovka II and Repin artifact assemblages have been equated with an early phase of Yamnaya since the 1960s, as described above and in more detail below. They have multiple radiocarbon dates and reported fauna. They are typological and chronological anchors for a chronology otherwise based on mostly isolated radiocarbon dates from mostly unstratified graves that often lack chronologically diagnostic artifacts. Mikhailovka II has three radiocarbon dates on ruminant animal bone, all older than 4350 BP or 3000 BC. Repin has six radiocarbon dates on animal bone, three forming a cluster older than 4350 BP and three forming a cluster younger than 4350 BP. Here my focus is on the three older dates, contemporary with Mikhailovka II. The archaeological contexts for these six dating samples are discussed by KOTOVA – SPITSYNA (2003) for Mikhailovka II and KUZNETSOV (2013) for Repin. In this discussion I ignore dates on organic pottery crusts from Repin, because all of them are centuries older than dates on animal bones, so appear to be affected by a FRE as discussed by KUZNETSOV (2013).

Generalka 2 is a Yamnaya settlement on an island in the Dnieper below the Dnieper Rapids that was studied using modern methods (KAISER *et al.* 2020; RADCHENKO – TUBOLTSEV 2019). Generalka 2 is primarily late Yamnaya, with a diverse artifact assemblage similar typologically to Mikhailovka stratum III. But recently an early Yamnaya ceramic component similar typologically to Mikhailovka II was recognized in one semi-circular, horse-shoe-shaped pit feature (KAISER *et al.* 2020, Fig. 11). The radiocarbon date from that component is older than 4350 BP (KAISER *et al.* 2020, Table 2) and is included in *Table 1* with the dates from Mikhailovka II and Repin. At Generalka 2, late Yamnaya contexts with materials like Mikhailovka III are younger than 4350 BP, and the early Yamnaya feature with ceramics like Mikhailovka II, including what looks like at least one Repin-style sherd, is older than 4350 BP. Generalka 2 supports a date for early Yamnaya before 4350 BP.

A date of 4350 BP calibrates to about 3000–2900 BC, and archaeologists agree that Yamnaya dates after 3000 BC—late Yamnaya dates, here—are numerous and not controversial. But seven radiocarbon dates from early Yamnaya settlement contexts at Repin, Mikhailovka II, and Generalka 2 are older than



4350 BP. How many Yamnaya kurgan graves are dated by radiocarbon dates on bones, teeth, or wood to  $\geq 4350$  BP? And where are they found? They should define the early Yamnaya phase.

To anticipate the results below, at least 43 radiocarbon dates from 27 Yamnaya kurgan cemeteries on bones or teeth or wood, that are not contradicted by a second date on the same Yamnaya individual, fall into the  $\geq 4350$  BP category. With the seven dates from three early Yamnaya settlements, 50 early Yamnaya dates are older than 3000 BC. What percentage of extant Yamnaya radiocarbon dates is this?

E. N. CHERNYKH (2017, fig. 11.5) compiled 407 radiocarbon dates from contexts designated as ‘Yamnaya’, the largest published compilation of Yamnaya dates. Most of them, 75% (291 of 407), came from kurgans between the Danube delta and the Dnieper in the western borderlands of the steppe zone. His 407 Yamnaya dates are not directly comparable to the 50 dates compiled here, because he accepted all dates without limitation on sample materials (I use only dates on bones, teeth, or wood) and without removing dates contradicted by a second date on the same individual. Other problems such as FRE, contamination, and inconsistent laboratory procedures should remove additional ‘Yamnaya’ dates from Chernykh’s compilation, and then newer dates should be added. If the total number of ‘Yamnaya’ radiocarbon dates today is around 400–500, then the 50 dates in *Table 1* would represent 10% or more of extant Yamnaya dates. This would mean that 80–90% of Yamnaya radiocarbon dates, and probably the greatest expansion in the number of Yamnaya cemeteries, occurred at 3000 BC and later, contemporary with Generalka 2 and Mikhailovka III. Mikhailovka level III was 10x larger in area than Mikhailovka level II and added stone fortification walls still preserved to a height of 2.5 m in the 1950s, described below (*Fig. 5*). But the oldest phase of the Yamnaya culture occurred before this late Yamnaya expansion.

*Table 1* lists the 50 radiocarbon dates that I was able to find, measured on bones, teeth, or wood from early Yamnaya cultural contexts in the Pontic-Caspian steppes, not contradicted by a second date on the same sample, and reported in the range 4350–4650 BP. The list includes three settlements (Repin, Mikhailovka II and Generalka 2) and 27 kurgan cemeteries. *Table 1* presents 14 newly reported dates from Yamnaya contexts that are 4350 BP or older, associated with ongoing studies at the Reich Laboratory of Human Genetics or at the Max Planck Institute in Jena. *Table 1* also includes 36 previously published dates from Yamnaya contexts reported as 4350 BP or older, culled from publications. Dates on bones or teeth are used here when possible, but in Ukraine dates from wood and charcoal must be used because very few dates are on bones or teeth.

The 36 previously published dates of 4350 BP and older in *Table 1* were taken from many sources. These include the compilation of 210 Yamnaya radiocarbon dates by TELEGIN *et al.* (2003) and the overlapping compilation by CHERNYKH – ORLOVSKAYA (2004). KOTOVA – SPITSYNA’s (2003) study of dates from Mikhailovka II was noted above. RASSAMAKIN – NIKOLOVA (2008) compiled 264 Yamnaya dates, 214 from Ukraine and 50 from Russia, again overlapping older compilations, in a study that remains useful today. SHISHLINA *et al.* (2009) published 10 new Yamnaya radiocarbon dates from kurgan graves in the Caspian steppes; KUZNETSOV (2013) published 14 dates from Yamnaya contexts with Repin-style ceramics; and MORGUNOVA (2014) published 43 dates from Yamnaya kurgan graves in the Volga-Ural steppes, including most of those listed by KUZNETSOV (2013). GOSLAR *et al.* (2015) published 70 new dates from kurgan graves in the middle Dniester steppe borderlands, most of which were attributed to Yamnaya, but only one date was older than 4350 BP; it is included in *Table 1*. CHERNYKH’s (2017) compilation of 407 Yamnaya dates, the largest, did not include a date list so was not a source. REINHOLD *et al.* (2017) published five new dates from early Yamnaya graves in the North Caucasus steppes; WANG *et al.* (2019) added three new Yamnaya dates; and KAISER *et al.* (2020) published many dates from Generalka 2.

*Table 1* does not include a date older than 4350 BP if it was an outlier more than two 95% confidence intervals removed from another date or dates on the same individual. In the RASSAMAKIN – NIKOLOVA

(2008) list of 264 dates from Yamnaya contexts in Russia and Ukraine, 14 graves reported as ‘Yamnaya’ (5%) were dated by two or more dates on the same individual, with results more than two standard deviations apart, one or both of which were older than 4350 BP. These 14 dates  $\geq 4350$  BP are contradicted by other dates on the same individual and were not included in *Table 1*. In the same list of 264 dates, 18 dates from ‘Yamnaya’ contexts (7% of their Yamnaya dates) were reported in the interval 4350–4650 BP, the target range for *Table 1*, and were not contradicted by other dates on the same individual. These 18 dates are included in *Table 1*. Only four dates (1.5%) in the Rassamakín and Nikolova list were reported as older than 4650 BP and did not have another date on the same individual to function as a confirmation. These four dates, older than 4650 BP (3516–3365 BC), also are considered outliers and are not included in *Table 1* with one exception. *Table 1* includes one date reported as  $4710\pm80$  BP from Mikhailovka II (KOTOVA – SPITSYNA 2003), but possibly from the upper part of Mikhailovka level I, given its reported 2 m depth. Dates in the 4650–4350 BP range, uncalibrated, correspond to the calibrated age range 3500–2900 BC.

I do not include Yamnaya graves from southeastern Europe, although there are dates from ‘Yamnaya’ contexts older than 4350 BP, because archaeologists working in the lower Danube (FRÎNCULEASA – PREDA – HEYD 2015) and Hungary (DANI 2020) agree that a pre-Yamnaya phase of kurgan construction by local imitators occurred prior to the large-scale Yamnaya migrations around 3000 BC, so it can be difficult to say if the earlier dates refer to Yamnaya or to local pre-Yamnaya imitator cultures. In any case, this phase of cultural coalescence in the farming-community frontiers began during the earliest Yamnaya period in the steppes, before 3000 BC.

In *Table 1* the oldest dated steppe Yamnaya settlements and graves are divided into groups. For each group I took the midpoint of each date range and averaged the midpoints to provide a comparative overview. The first group of dates is from settlement contexts at Mikhailovka II, Repin, and Generalka 2. Seven radiocarbon dates have an average midpoint of 3167 BC. The average midpoints for the oldest Yamnaya kurgan graves in six regions are about the same. In the middle Volga steppes, 14 graves from 7 kurgan cemeteries have 16 radiocarbon dates  $\geq 4350$  BP that averaged 3129 BC; in the Ural steppes, three Yamnaya graves from three different cemeteries averaged 3165 BC; in the lower Volga steppes, two graves from two cemeteries averaged 3107 BC; in the North Caucasus steppes, three graves from three cemeteries averaged 3189 BC; in the Dnieper-Azov-lower Don steppes, 11 Yamnaya graves from seven cemeteries averaged 3203 BC; and in the Dniester-Danube steppes, eight Yamnaya graves from five cemeteries averaged 3144 BC. Early Yamnaya kurgan graves appeared from the Ural steppes to the Danube steppes with average age midpoints between 3203–3107 BC, contemporary with Mikhailovka II and Repin.

Early Yamnaya material culture and its associated nomadic settlement patterns and kurgan cemeteries began as early as 3300 BC, spread rapidly across most of the Pontic-Caspian steppes perhaps between 3200–3100 BC, and finally in its late phase beginning by 3000 BC saturated all regions in the steppes while Yamnaya nomads burst into neighboring regions.

*Table 1. Radiocarbon dates of 4350 BP or older on bones, teeth, or wood from three early Yamnaya settlements and 41 graves. Sites with Repin-style ceramics are in italics*

Site name	Material	Lab #	Date BP	Calibrated date BC	Midpoint of calibrated dates
<b>Early Yamnaya Settlements</b>					
<i>Mikhailovka II</i>	Bone tool - lower II 2m	Ki-8012	4710 $\pm$ 80	3654–3346	3500
<i>Mikhailovka II</i>	Bone - upper II 1-1.2m	Ki-8186	4480 $\pm$ 70	3362–2931	3146

Site name	Material	Lab #	Date BP	Calibrated date BC	Midpoint of calibrated dates
<i>Mikhailovka II</i>	Bone - upper II 1-1.2m	Ki-8010	4570±80	3622–3025	3323
Generalka 2	Bone	OxA-23080	4366±28	3086–2907	2996
<i>Repin Khutor</i>	Cattle bone	Ki-15666	4380±90	3346–2881	3113
<i>Repin Khutor</i>	Horse bone	UCIAMS-218275	4400±30	3262–2917	3089
<i>Repin Khutor</i>	Horse bone	UCIAMS-223191	437±15	3078–2919	2998
			average of 7 midpoints = 3167 BC		
Later Yamnaya Phase					
<i>Repin Khutor</i>	Horse bone	Ki-15664	4070±60	2866–2473	2669
<i>Repin Khutor</i>	Horse bone	Ki-15665	4150±70	2896–2500	2698
<i>Repin Khutor</i>	Horse bone	Ki-15663	4180±80	2907–2577	2742
			average of 3 midpoints = 2703 BC		
Early Yamnaya Kurgan Cemeteries – Samara Region					
Grachevka II k.5 gr.2	Human bone	PSUAMS-4272	4410±25BP	3282–2918	3100
<i>Grachevka II</i> k.7 gr.2 central	Human bone	AA-53808	4419±56	3335–2912	3213
<i>Grachevka II</i> k.7 gr.1 periph.	Human bone	AA-53807	4361±55	3317–2885	3101
Kutuluk kurgan 4 grave 1	Human bone	AA12570	4370±75	3335–2882	3108
<i>Lebyazhinka V</i> grave 8	Human bone	PSUAMS-4258	4355±20	3020–2909	2964
<i>Lebyazhinka V</i> grave 9	Human bone	PSUAMS-4257	4475±20	3335–3033	3148
<i>Lopatino I</i> k.31 gr.1	Human bone	AA-47804	4432±66	3339–2918	3128
<i>Lopatino I</i> k.31 gr.1 2 <sup>nd</sup> date	Human bone	Ki-7764	4560±80	3619–3020	3319
Lopatino I k35 gr. 1	Human bone	Beta-392489	4380±30	3090–2913	3001
Lopatino I k1 gr. 1	Human bone	Beta-392491	4420±30	3321–2921	3121
Nizhnaya Orlyanka 1 k. 4 gr. 2	Human bone	AA12573	4520±75	3360–3090	3225
Nizhnaya Orlyanka 1 k. 4 gr. 2 2 <sup>nd</sup> date	Human bone	PSUAMS-4158	4425±20	3307–2928	3117
Nizhnaya Orlyanka 1 k.1 gr. 15	Human bone	OxA 4254	4510±75	3360–3090	3225
Nizhnaya Orlyanka 1 k.1 gr. 5	Human bone	PSUAMS-4544	4370±20	3080–2914	2997
Utyevka V k.1 gr. 1	Human bone	PSUAMS-5790	4430±25	3323–2928	3125
Podlesnoe K1 gr 3	Human bone	PSUAMS-4412	4465±20	3331–3028	3179
			average of 16 midpoints = 3129 BC		

Site name	Material	Lab #	Date BP	Calibrated date BC	Midpoint of calibrated dates
<b>Ural River steppes</b>					
<i>Gerasimovka II</i> k. 4 gr.2	Human bone	GrA 54389	4480±35	3390–3095	3242
Mustaevo V k.1 gr.1	Human bone	LE-6725	4460±110	3340–2930	3135
Mereke, Kurgan 1, Burial 4 - outlier	Human bone	PSUAMS-4944	4425±20	3307–2928	3117
			<b>average of 3 midpoints = 3165 BC</b>		
<b>Lower Volga steppes</b>					
Bykovo k.12 gr.7	Human bone	PSUAMS-7787	4350±35	3086–2896	2991 BC
Panitskoe grave 1	Human bone	PSUAMS-4161	4505±20	3344–3102	3223 BC
			<b>average of 2 midpoints = 3107 BC</b>		
<b>North Caucasus steppes</b>					
Sharakhalsun 6 k.2 gr.18 wagon grave	Wood from wheel	GIN-12401	4500±40	3336–3105	3220
Rasshevatskiy 1 k.21 gr.13	Human bone	MAMS-29181	4447±22	3308–3026	3221
Ostanii k.1 gr.160 wagon grave	Human bone	Le-2963	4440±40	3320–2930	3125
			<b>average of 3 midpoints = 3189 BC</b>		
<b>Dnieper-Azov-lower Don steppes</b>					
Vinogradnoe k.24 gr.20	Wood	Bln-4691	4371±36	3093–2905	2999
Obloy k.1 gr. 7	Wood	Le-1508	4630±90	3632–3099	3365
Ozera	Human bone	Beta-432809	4390±30	3095–2915	3005
Bal'ki kurgan gr.57, wagon grave	Human bone	Ki-606	4370±120	3330–2880	3105
<i>Volonterivka</i> k.1 gr.3	Human bone	Ki-9917	4570±80	3622–3025	3323
<i>Volonterivka</i> k.1 gr.4	Human bone	Ki-9918	4535±80	3512–2937	3224
<i>Volonterivka</i> k.1 gr.5	Human bone	Ki-9919	4490±80	3482–2923	3202
<i>Kremenivka</i> k.6 gr.9	Human bone	Ki-7260	4465±60	3337–2905	3121
<i>Kremenivka</i> k.6 gr.8	Human bone	Ki-9898	4410±70	3560–3520	3540
<i>Krivyansky IX</i> k.4 gr. 21A	Human tooth	PSUAMS-7979	4495±25	3345–3096	3221
<i>Krivyansky IX</i> k.1 gr.27	Human bone	PSUAMS-7867	4440±25	3330–2933	3131
			<b>average of 10 midpoints = 3203 BC</b>		



Site name	Material	Lab #	Date BP	Calibrated date BC	Midpoint of calibrated dates
<b>Dniester-Danube steppes</b>					
Sărăteni k.1 gr. 5	Wood	Lu-2459	4360±30	3085–2903	2994
Sărăteni k.1 gr.4	Wood wagon parts	Lu-2476	4480±50	3361–2970	3166
Semenovka k.11 gr.6	Wood	Ki-1758	4400±50	3329–2804	3067
Semenovka k.14 gr. 52	Wood	Ki-2126	4600±90	3627–3030	3329
Liman k.2 gr.2	Wood	Ki-2394	4490±90	3491–2914	3203
Novosil'ske k.19 gr.7, phase1	Human bone	Ki-1219	4520±70	3360–3100	3230
Novosil'ske k.19, gr.15, phase2	Human bone	Ki-1712	4350±70	3090–2880	2985
Prydnistrianske I, k. 4, gr.4, level 2	Human bone	Poz-66230	4455±35	3323–3027	3175
			<b>average of 8 midpoints = 3144 BC</b>		

*Figure 2* locates on a map the 27 early Yamnaya kurgan cemeteries and three early Yamnaya settlements with dates of 4350 BP and older in *Table 1*. Some sites might be removed from the map as outliers if we had more dates from that grave, and other sites probably should be added. But all Yamnaya regions from the Ural steppes to the Danube steppes have dates in this oldest range.

There is no obvious cluster of older dates in one region that might appear as a ‘homeland’. The large number of dated Yamnaya graves from the Samara region is the result of a high level of activity by Samara archaeologists and funding for radiocarbon dates from the Russian Institute of Archaeology, the Samara Valley Project (ANTHONY *et al.* 2016a), and the Reich lab at Harvard (HAAK *et al.* 2015). The lower Volga region has very few radiocarbon dates for the kurgan cemeteries that Merpert assigned to the oldest phase of the Yamnaya culture, but at Bykovo and Berezhnovka, two of his most important early Yamnaya sites (MERPERT 1974, 51; MALLORY 1977, 342–343), we have new dates no older than elsewhere. The eastern Yamnaya region, east of the Don River, produced 24 dates  $\geq$  4350 BP from 15 Yamnaya kurgan cemeteries; and the western Yamnaya region west of the Don produced 26 dates from 12 cemeteries and three settlements, so the oldest dates are evenly distributed between eastern Yamnaya and western Yamnaya regions.

The most interesting aspect of *Figure 2* is that the earliest dated Yamnaya sites were already distributed from Mustaevo on the Ural River to Sărăteni in the piedmont of the eastern Carpathians. Yamnaya spread quickly across the Pontic-Caspian steppes from an area of origin that has not yet been identified chronologically. The oldest radiocarbon dates from Yamnaya contexts do not identify a single oldest region of origin, but rather suggest a rapid and explosive expansion that began in the earliest Yamnaya phase.

### Steppe settlements of the late 4<sup>th</sup> millennium BC

East of the Don River, MORGUNOVA (2015, Fig. 2) and SHISHLINA (2008, Fig. 107) mapped 80 Eneolithic settlement sites in the Volga-Ural-Caspian steppes. All were abandoned during the Yamnaya period. No settlements are recorded in the Volga-Ural-Caspian steppes for almost 1500 years, between the end of the

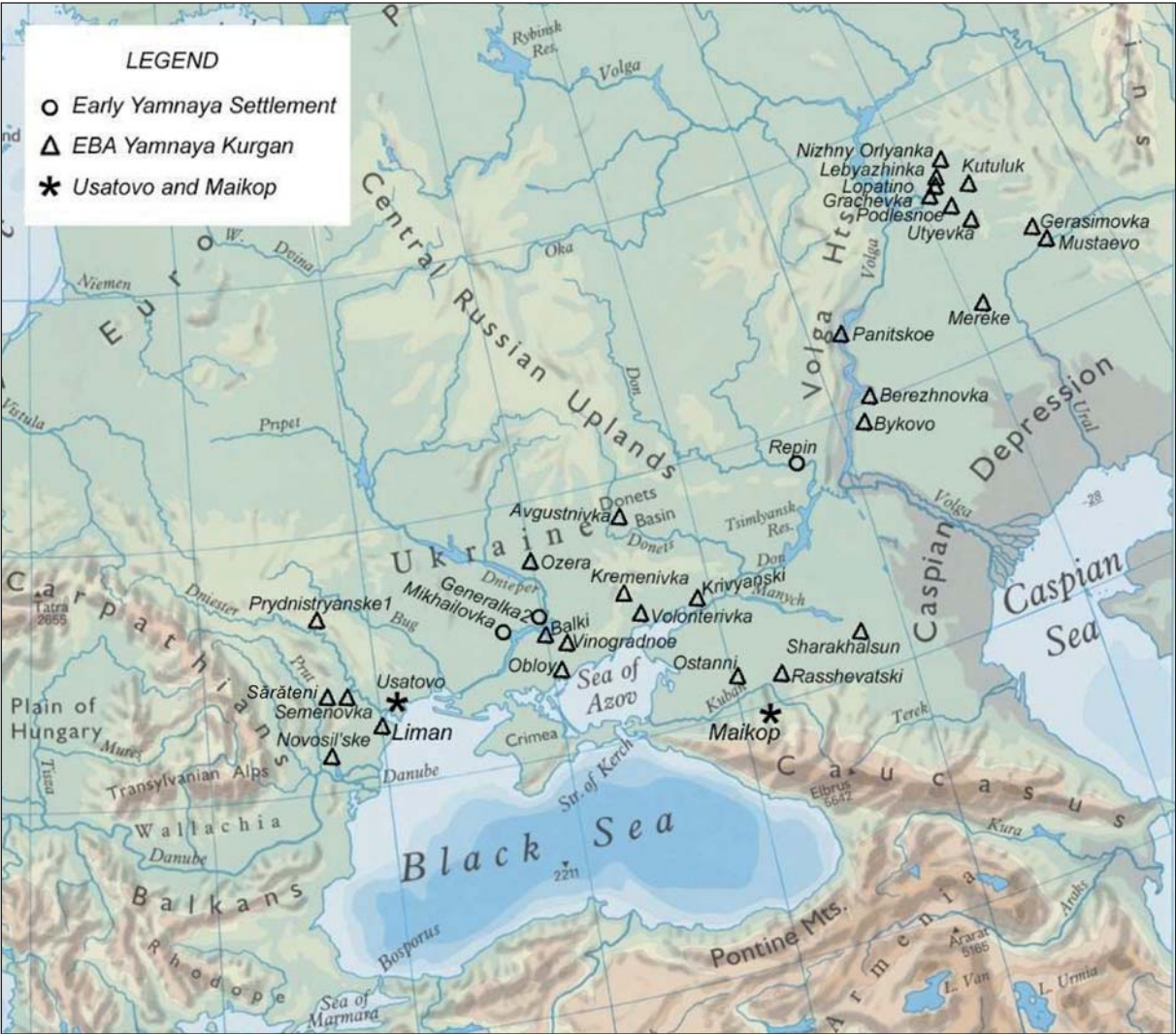


Fig. 2. Early Yamnaya sites included in Table 1, with radiocarbon dates on bones or teeth of  $\geq 4350$  BP. Circles: settlements. Triangles: cemeteries. Usatovo and Maykop are added

Eneolithic (3200–3100 BC at Turganik) and the beginning of the LBA (beginning 1900/1800 BC at the early Srubnaya-culture Krasnosamarskoe settlement examined by ANTHONY *et al.* 2016a). Occasional scatters of Yamnaya pottery sherds and lithics in wind-deflated sites in the Caspian Depression (MERPERT 1974, 100–101) are attributed to Yamnaya herders’ camps; and the Samara Valley Project in the middle Volga steppes used targeted shovel testing to discover MBA sherd scatters not visible on the ground surface that had subsurface artifact densities of one (small) ceramic sherd per 4-8 m<sup>2</sup>, with no apparent cultural level (ANTHONY *et al.* 2016b). Subsurface artifact densities of 1 sherd/4-8 m<sup>2</sup> fall below the threshold of normal archaeological visibility. The dominance of temporary camps with vanishingly low artifact densities for almost 1500 years over this huge region implies a continuously mobile, nomadic mode of residence.

West of the Don River in Ukraine the steppes are more humid and natural resources are richer than in the arid steppes east of the Don. A handful of stratified riverine Eneolithic settlements in the lower Don (Samsonovka, Liventsovka, Razdorske) and Dnieper valleys (Mikhailovka, Generalka

2, Strilcha Skelya) retained ephemeral occupations in the Yamnaya period. These western Yamnaya settlements imply longer-term or more frequent re-occupations and more continuity between the Eneolithic and Yamnaya settlement patterns. Two settlements, Mikhailovka and Repin, produced early Yamnaya cultural levels with multiple radiocarbon dates, a high density of artifacts, and published fauna. Defensive stone walls are reported at Liventsovka on the lower Don, Mikhailovka level III, and Durna Skelya, a destroyed site in a northern suburb of Zaporozhe. Usatovo, a non-Yamnaya site, was another important settlement located near modern Odessa on the northwest coast of the Black Sea during the late 4<sup>th</sup> millennium BC, with reported fauna and multiple radiocarbon dates, largely contemporary with Mikhailovka II and Repin. Usatovo was not a Yamnaya-culture site, but it had kurgan graves for its elite, a steppe-zone pastoral economy, and trade connections with the Aegean (*Gorgonium* coral), and possibly with the Baltic (amber), and Maykop (silver). It is usually classified as an Eneolithic culture, but it was contemporary with EBA Mikhailovka II and Repin between 3400–3000 BC.

### Repin on the Don

The Repin settlement is designated Repin Khutor (Repin farm) to differentiate it from nearby kurgan cemeteries. It is near modern Serafimovich, Russia at approximately 49°34'20.46"N and 42°44'49.93"E. The town grew from a 16<sup>th</sup> century Cossack military settlement located at a river crossing where an old north-south road from the middle Volga steppes to the lower Don steppes crossed the Don River below its junction with the Medveditsa River. The Don River in this region has a high right bank that drops steeply to the water's edge, but at Serafimovich a ravine cuts through the bluffs and provides a level path to the river, and an island makes crossing easier. Even today the only bridge over the Don for 80 km in either direction is at Serafimovich. The Repin site overlooked the river crossing from about 2.4 km to the south on the east flank of a hill today named Gagarin Mountain after the cosmonaut. No other Yamnaya settlement had such an elevated position.

Repin was excavated without screens in the 1950s and was never described in detail (SINITSYN 1957). The cultural level was a single undifferentiated Yamnaya stratum containing broken pottery, animal bones, and charcoal, with no house or pit features. It extended for about 200 meters in a NE-SW direction along the edge of a shallow, lightly forested ravine trending NE, in a deposit about 15 m wide (SINITSYN 1957; KUZNETSOV 2013). A linear cultural deposit like this could have been created by NW-facing Yamnaya camps protected from the summer sun in a band of shade from trees in the ravine. The ceramics from Repin Khutor were immediately compared to similar wares from early Yamnaya graves on the lower Volga (Bykovo II, k2/3) and from Mikhailovka II, then under excavation (SINITSYN 1957). Repin was re-tested with a small exploratory excavation by N. M. Malov in 1989 (KUZNETSOV 2013). The cultural level he encountered was like that described in 1957: Repin-style shell-tempered ceramics, animal bones, and charcoal, but no discernable features. KUZNETSOV (2013) discussed the radiocarbon dates from both the original excavations and from Malov's later excavation and is the primary source for this summary.

The Repin fauna is as unusual as its location. Bibikova originally identified 80% of the 817 reported identifiable mammal bones as horse bones. SHILOV (1985) later revised Bibikova's 80% to 55% horse bones, 18% cattle, 9% sheep-goat, and 9% pig, based on the bones he was able to find. Malov's 1989 excavation supported Bibikova: among 144 animal bones, he also found 80% horse bones, with cattle and sheep-goat in minor roles at 8% and 10% (KUZNETSOV 2013, 13). Horse bones are abundant in Eneolithic steppe settlements, but Repin is the only Yamnaya settlement with a meat diet dominated by horses. If this unusual diet continued through both the early and late phases at the site (as revealed by



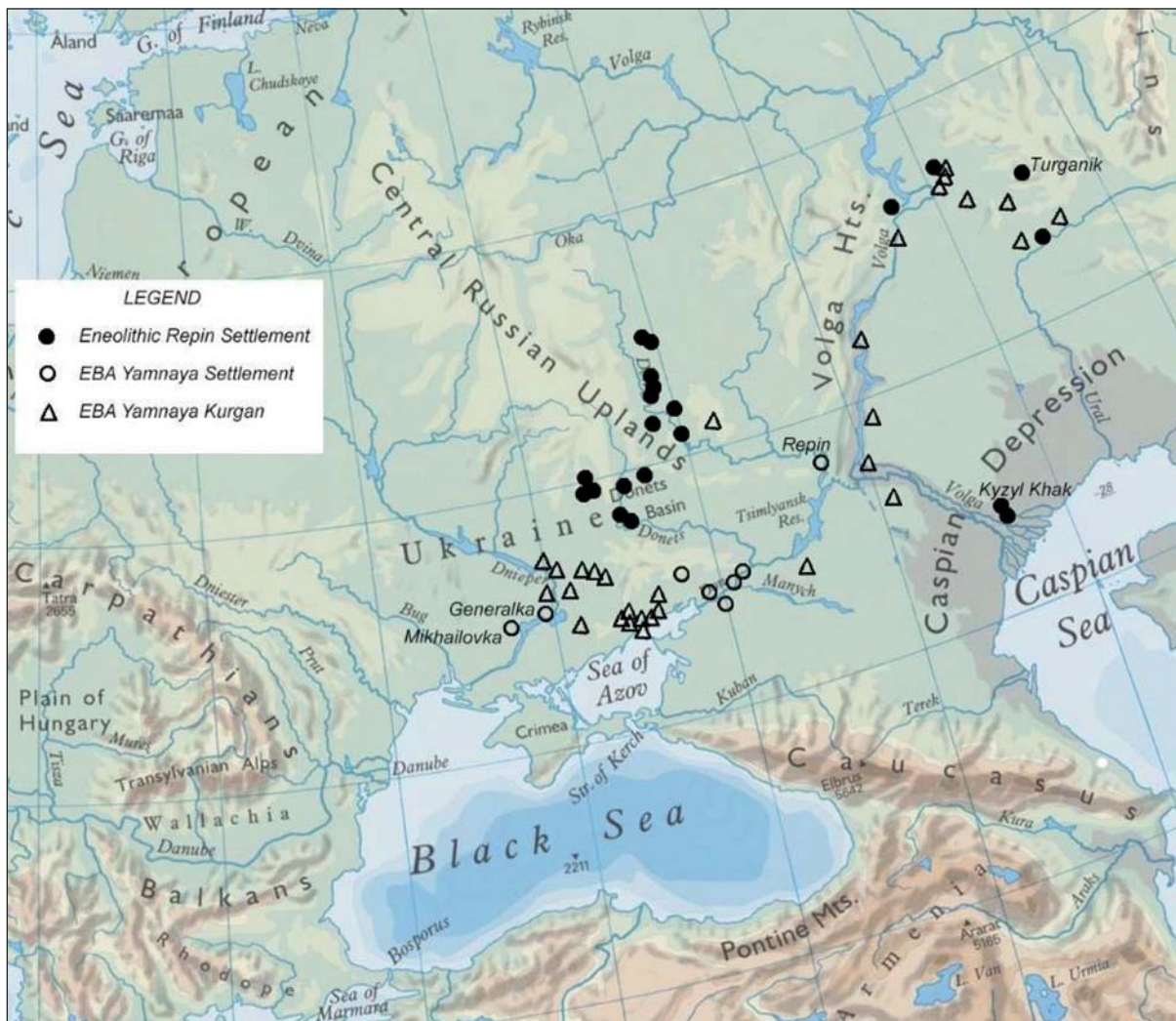


Fig. 3. Sites with Repin ceramics, Eneolithic and EBA. After KUZNETSOV 2013 and RASSAMAKIN 2013

radiocarbon dates in *Table 1*) it would make the diet here seem connected to an institutionalized special behavior.

Repin is important for its large assemblage of thick-walled, shell-tempered ceramics, which were made in a distinctive series of ovoid shapes with thick everted rims and cord- and comb-impressed decoration, decorated with pushed-out ‘pearls’ and multiple horizontal lines around the neck (*Fig. 4*). But Repin is not the oldest site with ceramics like this. Similar ovoid vessels were subsequently found in a wide variety of settlements: on the lower Volga at Kyzyl Khak dated 3700–3600 BC, substantially older than the Repin site; and in late Eneolithic settlements on the middle Don (Cherkasskaya, where Repin-like ceramics were stratified beneath Yamnaya-like ceramics). My 2007 book was written when these early Repin dates were still being absorbed into debates over Yamnaya chronology (ANTHONY 2007, 274–275, 317–320).

*Figure 3* shows the geographic distribution of all sites with Repin ceramics, combining a map by KUZNETSOV (2013, *Figure 1*) that showed settlements and kurgan graves with Repin ceramics in Russia; and a map by RASSAMAKIN (2013, *Figure 12*) that showed kurgan graves with Repin ceramics in eastern Ukraine (but excluded the settlement of Mikhailovka II). Many settlements with Repin ceramics seem

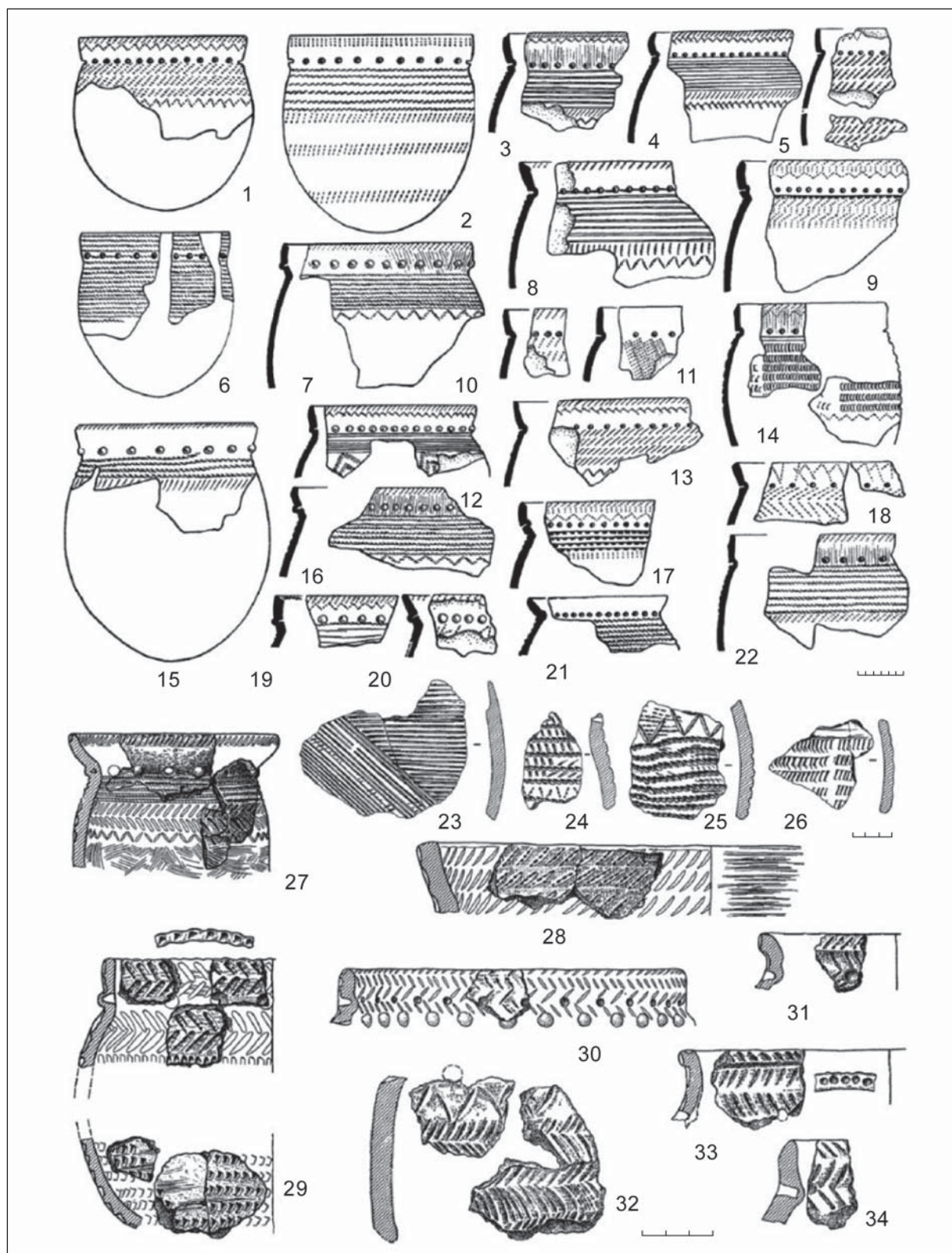


Fig. 4. Repin-style ceramics from Yamnaya settlement contexts on the lower Don.  
 1–22, Repin Khutor; 23–26, Repin Khutor sherds excavated by N. M. Malov;  
 27–34, Samsonovka Yamnaya settlement. After KUZNETSOV 2013



to be Eneolithic in date, beginning in the early and middle 4<sup>th</sup> millennium BC, although the range of dates is not well established. Most of them are in the northern steppe and forest-steppe vegetation zones, from the middle Don (Cherkasskaya) eastward to the southern Ural steppes (Turganik). But some late Eneolithic camps on the lower Volga (Khyzl Khak) also have primarily Repin ceramics dated to the mid-4<sup>th</sup> millennium BC, and perhaps indicate north-south movements down the Volga. Settlements on the lower Don, in contrast, have late Eneolithic strata with Sredni Stog-like ceramics, and the shift to the Repin style occurred only during the Yamnaya era, when these sites (Samsonovka, Liventsovka, Razdol'noe) retained some traces of occupation by Yamnaya herders with Repin-style ceramics, stratified above the late Eneolithic occupations. From this sequence it seems that Repin ceramics appeared in Eneolithic, pre-Yamnaya settlements on the Volga and middle Don, that were contemporary with Sredni-Stog-like ceramics on the lower Don; then the Repin style spread southward and westward in the early Yamnaya period, replacing Sredni-Stog-like components at sites in the lower Don and Dnieper steppes. *Figure 2* (Yamnaya graves with early radiocarbon dates) and *Figure 3* (sites with Repin ceramics, both Eneolithic and Yamnaya) overlap in the same eastern Yamnaya area, but many eastern Yamnaya graves with early dates do not contain Repin ceramics, so do not appear in *Fig. 3*; and many eastern Yamnaya graves with Repin ceramics are not dated, so do not appear in *Fig. 2*. Yamnaya graves with the oldest radiocarbon dates include graves with Repin pottery (italicized in *Table 1*) and with other styles (not italicized). The oldest Yamnaya phase is associated with multiple regional ceramic types, one of which was Repin, originally a northern and eastern pottery style that spread westward into the lower Don and Dnieper valleys with early Yamnaya (*Figs 3–4*).

Turganik is a well-documented settlement site in the middle Volga/south Ural steppes with a Repin-style ceramic assemblage that I would assign to the Eneolithic, excavated by MORGUNOVA (2017), and assigned by her to the early EBA. The Repin ceramic component at Turganik has six radiocarbon dates on ruminant animal bones between 4039–3654 BC (5068±80, SPb-1492) and 3496–2908 BC (4490±100, SPb-1860) (MORGUNOVA 2017, 226). The average of the six midpoints is 3498 BC. The site, located on the upper Samara River in the steppe zone at a stream junction beside a small riverine wetland, was re-occupied multiple times between 3800–3200 BC (more probably between 3600–3200 BC if the single oldest date is discarded) by people making a local version of Repin-style pottery. In the upper levels they deposited cuprous slag and ore probably from the nearby Kargaly copper outcrop, as well as stone molds, hammers, and anvils, indicating on-site metallurgy. The youngest two dates from the upper levels (4490±100, SPb-1860; and 4530±70, SPb-1859) have an average midpoint of 3210 BC, within the range of early Yamnaya dates. Domesticated animals were 87% of the 3371 animal bones assigned to the Repin component, with 60% sheep-goat, 22% cattle, and 5% horses (calculated from MORGUNOVA 2017, Tables 33–35). The Repin ceramic style at Turganik was plainer and somewhat different in shapes from the later Repin style that was made in the Yamnaya era.

The Repin 'family' of ceramic styles is central to debates about Yamnaya chronology. RASSAMAKIN (2011; 2013), following SINYUK (1981), argued that Repin pottery should designate a separate Repin culture, which should be placed entirely in the Eneolithic. Rassamakin observed that the kurgan graves that contained Repin pottery in Ukraine exhibited Eneolithic grave types and pre-Yamnaya stratigraphic positions, according to his chronology of Eneolithic kurgan grave forms and types (RASSAMAKIN 2011). Rassamakin is among a group of archaeologists who successfully argued that the first and oldest kurgans appeared in the Eneolithic, beginning in the late 5<sup>th</sup> millennium BC, in scattered places in the North Caucasus steppes (KORENEVSKII 2012), the Azov-Don steppes (RASSAMAKIN 2011), and the steppes north of the Danube delta (GOVEDARICA – MANZURA 2016), all cultural border areas, long before kurgans became ubiquitous in all parts of the steppes during the Yamnaya period. The same burial position, supine with raised knees, and a similar use of red ochre to mark the feet and head appeared in Eneolithic

and in early Yamnaya graves, so they can be difficult to distinguish without artifacts. The kurgan graves at Kremenivka and Volonterivka with Repin pottery (dates in *Table 1*: Dnieper-Azov Steppes), assigned to the Yamnaya culture by their excavators, by TELEGIN *et al.* (2003), and in *Table 1*, were reassigned by Rassamakin, based on his grave typology, to the Eneolithic. Rassamakin argued that no actual Yamnaya grave in Ukraine contained Repin ceramics (RASSAMAKIN 2013, 127), while KUZNETSOV (2013) identified and mapped 40 Yamnaya graves that contained Repin ceramics in the adjacent Russian steppes (*Figs 3–4*). *Table 1* shows at least 43 Yamnaya graves from across the Pontic-Caspian steppes with radiocarbon dates contemporary with Repin and Mikhailovka II between about 3300–3000 BC, many containing Repin ceramics (italicized in *Table 1*). Rassamakin's acceptance of Repin as a separate Eneolithic culture led him to re-classify Mikhailovka II with its Repin component as pre-Yamnaya. In Rassamakin's revised chronology (RASSAMAKIN 2013; MILETO *et al.* 2018) early Yamnaya began about 3000 BC, with Mikhailovka III.

The opposite approach to Repin was taken by MORGUNOVA (2017). She decided to classify all sites with Repin pottery as Bronze Age, including the Turganik Repin stratum with dates going back to 3800 BC, which she suggested was the beginning of the EBA. She argued that metallurgical production began at Turganik in the Repin stratum, stratified above older Eneolithic occupations, a technological argument for an EBA date; and she accepted the radiocarbon dates on organic crusts in pottery from the Repin site, although all of them were centuries older than the dates on animal bone (KUZNETSOV 2013). They supported a date as early as 3800 BC for the Repin phase. However, more reliable dates on animal bone indicate that most of the Repin-style occupations at Turganik occurred in the middle of the 4<sup>th</sup> millennium BC (average midline of six dates was 3498 BC), before the late-4<sup>th</sup>-millennium Yamnaya activity at the Repin site on the Don. Also Turganik had recurring occupations over a long period of time, showing that the settlement pattern was different from the mobile Yamnaya pattern that began after Turganik was abandoned about 3100 BC. After 3100 BC no trace of settlement occurred at Turganik or any other Eneolithic site in the Volga-Ural steppes for a millennium.

All these Repin components are not identical. The Repin ceramics at Mikhailovka II have much more cord-impressed decoration than the Repin ceramics at Repin do; the latter have more comb-impressed technique, although with similar motifs at both sites. The Repin ceramics at Turganik are plainer, with less decoration. But many argue that the Repin 'family' of styles began in the Eneolithic (as at Turganik) and continued into the EBA (Repin and Mikhailovka II) (TRIFONOV 1996; TELEGIN – PUSTALOV – KOVALYUKH 2003; SHISHLINA 2008; KUZNETSOV 2013).

### Mikhailovka on the Dnieper

The other early Yamnaya settlement with multiple radiocarbon dates (*Table 1*) is Mikhailovka on the lower Dnieper River. Like Repin, it might have been located at an important river crossing. Where the Dnieper River expanded into the steppe lowlands below the last of the Dnieper Rapids at modern Zaporozhe, it carved a basin that extended 100 km E-W and 20 km N-S, now filled by the Kakhovsk'e reservoir. Bal'ki kurgan, one of the early Yamnaya graves in *Table 1*, containing a wagon wheel and a tanged copper dagger, was located on a bluff overlooking the south side of this depression. The floor of the basin was a wetland 20 km wide containing sand dunes up to 20 m high, pine forests, marshes, and a maze of innumerable shallow lakes. It was unsettled in historic times and no major road or bridge crossed it. Below this 100-km-long barrier the Dnieper re-gathered into a single stream, relatively easy to cross. Mikhailovka was located 12 km below the place where the river consolidated into a single stream, overlooking an island that made crossing easier. The area around the site offered a better crossing place than most places for 100 km upstream. The site is south of the modern village of Mikhailivka at





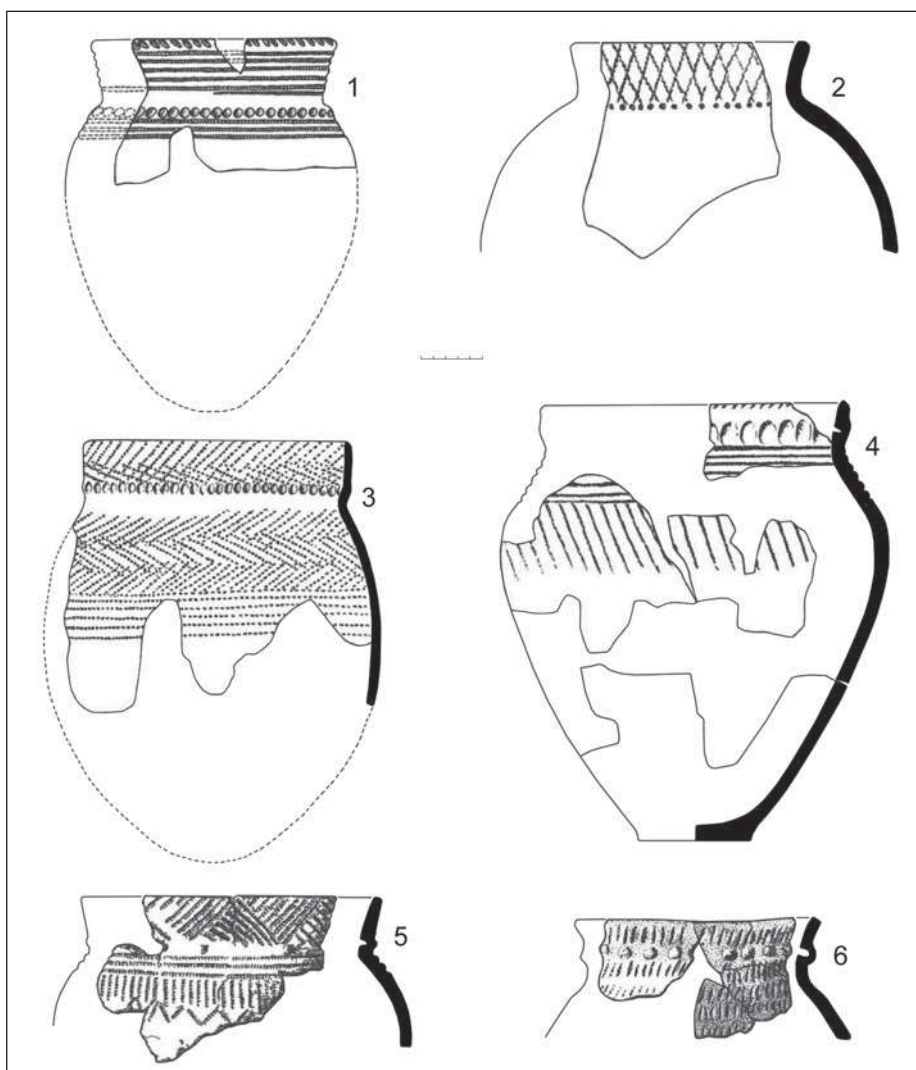


Figure 6. Mikhailovka II ceramic vessels, after KOROBKOVA – SHAPOSHNIKOVA 2005, Figs 27–29

eight structures stratified above and below an ashy layer apparently representing a large fire. The earlier structures were pit-houses (one contained a Trypillia C2 sherd) and the later ones were built on the ground surface. Bone dating samples Ki-8186 and Ki-8010 were taken from square LII, from the upper part of level II, from the floor of the southern part of structure 7 (Fig. 5). They should apply to a late phase of early Yamnaya.

Late Yamnaya Mikhailovka III (3000–? BC) with its flanking stone walls enclosed a space 10 times larger, about 15,000 m<sup>2</sup>, not all of it occupied. Mikhailovka III expanded to cover both hills, south and north, and had buildings with foundations made of stone protected by stone walls preserved intermittently to a height up to 2.5 m and a length of 45 m in the 1950s. Figure 5 shows the stone foundations of the late Yamnaya settlement (thick lines) on both hills and the outlines of the Mikhailovka II house foundations (thin lines), confined to the northern hill. Mikhailovka III was contemporary with Troy I and the early part of II.

The early Yamnaya Mikhailovka II ceramic assemblage was heterogeneous (Fig. 6). Some flat-based pots were like Mikhailovka I types, showing local continuity from Eneolithic pottery traditions

(Fig. 6.4); and some necks and shoulders retained late Sredni Stog cord-impressed decorative motifs (Fig. 6.2); while shell-tempered, round-based vessels of the eastern Repin type (Fig. 6.3, 6) totaled 10–15 whole vessels out of about 150 found (KOTOVA – SPITSYNA 2003; KUZNETSOV 2013, 19). KAISER (2010) considered Mikhailovka II to be an early Yamnaya cultural stratum with a Repin ceramic component, as did TRIFONOV (1996), TELEGIN *et al.* (1971), SHISHLINA (2008) and KUZNETSOV (2013). The ceramics from Mikhailovka II were regarded as the type collection for early Yamnaya by the site excavators (LAGODOVSKAYA – SHAPOSHNIKOVA – MAKAREVICH 1959; 1962), by MERPERT (1974, 116–117), and by the authors of the most recent monograph on Mikhailovka, titled (in Russian) *Mikhailovka: Reference Site for Early Yamnaya* (KOROBKOVA – SHAPOSHNIKOVA 2005). Early Yamnaya ceramics are so regionally variable (IVANOVA 2006) that it is unwise to describe the Mikhailovka II ceramic assemblage as ‘typical’, but it is a large lower-Dnieper assemblage of early Yamnaya ceramic types and technology at a politically important center.

Mikhailovka II and III unfortunately were combined when the zoological remains were analyzed. Mikhailovka II-III together produced an unprecedented 52,542 animal bones, 45 times (!) more than the quantity recovered from Eneolithic Mikhailovka I (SHEVCHENKO 1957; DERGACHEV 2007, 447). This is more animal bones by an order of magnitude than any other Yamnaya site, 17× more than Generalka 2 (3,071) in only twice the area excavated; and 5× more than Usatovo (10,925). Cattle constituted 66% of domesticated animal bones and 54% of individuals MNI, followed by sheep-goat (32% bones/40% MNI), and again a high number of horses (12% bones/17% MNI) (TSALKIN 1970; SHILOV 1985; DERGACHEV 2007, 447). Horse fats were detected on 37% of the ceramic sherds from Mikhailovka II analyzed for lipid residues (MILETO *et al.* 2018, 6), so horses might have been more important contributors to the diet than the bone percentages suggest, an equid dietary importance indicated also at Repin and hinted at in the lipid residues at Generalka 2 (KAISER *et al.* 2020, 33).

The uniquely large quantity of cattle bones at Mikhailovka II-III could represent feasting activities. The 30,571 cattle bone fragments represented at least 1627 individuals MNI (DERGACHEV 2007, 447), compared with 20–30 individuals at Generalka 2 in about half the area excavated (KAISER *et al.* 2020, 35). Neolithic domesticated cattle in Eastern Europe weighed between 350–500 kg (KYSÉLY 2016, 44). If we assume a conservative 400 kg, with about 40% of that representing ‘retail’ meat cuts, 1627 cattle would produce 260,320 kg (260 metric tons!) of beef, for a settlement that had only 3–5 contemporary domestic structures. The enormous quantity of beef suggests that guests from outside the settlement were feasted here repeatedly. Although it was relatively small and produced only 2.5 m of deposits over perhaps 500 years, Mikhailovka II-III appears to have been a central place unlike any other, with a cluster of permanent structures, fortifications, and evidence of large-scale feasting.

### Usatovo near the Dniester

The Usatovo settlement of 3–4 ha. (Fig. 2) was on the crest of a hill in the coastal steppes overlooking a bay on the northwest shore of the Black Sea, a location apparently chosen for its access to the sea, near the modern seaport of Odessa, at 46°32′10.86″N, 30°40′19.30″E (ANTHONY 2007, 349–359; ZBENOVICH 1974). The Usatovo culture was a coalescent culture, with cord-impressed, white-encrusted coarse wares that look like a late survival of Cernavoda I pottery, a steppe-derived tradition; and painted Trypillia C2 fine wares made in agricultural towns such as Gordinești in the middle and upper Dniester and Prut valleys (IVANOVA – TOSCHEV 2015). Both wares were distinct from any Yamnaya ceramics. Coalescence between steppe and agricultural cultures, possibly in a patron-client relationship, is suggested at Usatovo by two rich kurgan cemeteries, each of which was accompanied by a group of poorer flat graves, without kurgans, similar to Trypillia C2 flat-grave cemeteries in the upper Dniester such as Vikhvatinskii. The

central graves under the kurgans contained riveted copper daggers with cast midribs, silver spiral hair ornaments, coral beads (*Gorgonarium*) from the Aegean Sea, and amber beads perhaps from the Baltic. Such artifacts were not offered in the flat graves. Some kurgans contained carved stone stelae with images of humans and animals including dogs and horses. Thirty silver ornaments, mostly spirals, were found in kurgan graves at Usatovo, and the silver was identical chemically to the silver spirals found in 42 Yamnaya graves (IVANOVA 2007). Production and export of salt might explain the wealth of Usatovo (IVANOVA 2010). The fauna recovered from the Usatovo settlement amounted to 10,925 identified bones from 892 animals (MNI). The dominant species was sheep-goat (62% of bones, 49% MNI), followed by cattle (24% of bones, 29% MNI), horses (13% of bones, 18% MNI), and pigs (0.5% of bones, 3% MNI) (TSALKIN 1970, Table 48). Horses again were 18% of MNI, as at Mikhailovka II-III.

PETRENKO – KAISER (2011) reviewed 42 radiocarbon dates from two Usatovo settlements and many graves that placed the Usatovo culture between 3500–2900 BC. Related sites of the late Trypillia Gordinești group are independently dated by radiocarbon to 3300–3000 BC (IVANOVA – TOSCHEV 2015, 339). Usatovo usually is classified as an Eneolithic culture because fine painted Trypillia C2 painted pots of the Gordinești type are found in many Usatovo kurgan graves. The Trypillia culture belonged mainly to the Eneolithic. Before radiocarbon dates were available the Trypillia painted wares in Usatovo kurgan graves made them Eneolithic too. But radiocarbon dates (PETRENKO – KAISER 2011; VIDEIKO 1999) indicate that Usatovo graves and the Usatovo and Mayaki settlements were contemporary with EBA Mikhailovka II and Repin in the late 4<sup>th</sup> millennium BC. The Eneolithic label for Usatovo gives the impression that it is chronologically older than EBA Yamnaya, but radiocarbon dates show that only the earliest Usatovo graves are older, and most of the culture was contemporary with early Yamnaya between 3300–3000 BC.

## Conclusion

Three early Yamnaya settlements (Repin, Mikhailovka II, and Generalka 2) and 43 early Yamnaya individuals from 27 kurgan cemeteries distributed across the Pontic-Caspian steppes have radiocarbon dates older than 4350 BP, with calibrated averaged midpoints between 3203–3107 BC. Early Yamnaya material culture, as known primarily from graves, included wheeled vehicles, tanged daggers, sleeved axes made of arsenical bronze, and silver hair rings, all of which might have been borrowed from the late Maykop culture (although a local invention of sleeved axes in Ukraine is defended by KLOCHKO 2019). The Maykop connection supports an EBA, Circumpontic Metallurgical Province designation for early Yamnaya. Yamnaya material culture also included triangular flint projectile points with a slightly concave base (dominant form, with several minor types), canine-tooth pendants, stone end-pestles, bone pins, and a range of late 4<sup>th</sup> millennium ceramics, including but not limited to the Repin style. Kurgan graves with elements of this package, classically with the dead in the ‘Yamnaya position’ but occasionally contracted on the side, and strewn with red ochre, began to appear about 3300 BC, paired with a new nomadic settlement pattern and a newly simplified animal-protein diet, as indicated by milk peptides and stable isotopes in Yamnaya teeth and bones. Compared to late Yamnaya, after 3000 BC, it seems that there were relatively few fully nomadic communities in the Pontic-Caspian steppes during the early Yamnaya phase because only 10-20% of Yamnaya radiocarbon dates fall into the 3300–3000 BC range. Kurgan cemeteries of this age can be identified from the Carpathian piedmont to the Ural steppes, so nomads were very broadly distributed over the steppe landscape.

The Mikhailovka settlement, positioned topographically to overlook (control?) a Dnieper River crossing, was the only Eneolithic riverine settlement in the Pontic-Caspian steppes (level I) that

expanded in size and artifact density after the shift to nomadism contemporary with level II, between 3400–3000 BC. Mikhailovka II was visited by people with Repin pottery, absent in III or I, indicating contact with eastern early Yamnaya populations. In late Yamnaya level III Mikhailovka expanded again by 10x, adding high stone walls and more metals. Genetic relationships between Yamnaya individuals in southeastern Europe and the Volga steppes indicate that after 3000 BC nomadic steppe communities crossed and re-crossed the Dnieper in east-west migrations that reached as far as Hungary. In all significant migration streams there were places where migrants re-organized, participated in inter-group hospitality, and acquired information about prospects and targets ahead (ANTHONY 1990; MOCH 1992, 42). Feasts of beef occurred on an unparalleled scale at Mikhailovka II-III, a signal of political importance consistent with such a *caravanserai* role.

On the opposite side of the Khakhovskii wetland, 100 km to the north, Generalka 2 was established on an island in the Dnieper during Mikhailovka II; it also expanded greatly in area during Mikhailovka III. The early Yamnaya features at Generalka 2 appear to contain at least one illustrated Repin-style sherd (KAISER *et al.* 2020, Fig. 11). Generalka 2 seems to have been a ritual center, with mostly cattle bones, but only 5-6% of the bones seen at Mikhailovka. Perhaps the ritual activities did not include large feasts. Generalka 2's location on a riverine island might remind us of the location in ancient Rome of the temple of the healing god Asklepios on the Tiber Island opposite the early city. This island was dedicated to healing rites because early Latins, as well as Greeks, feared and respected the powers that resided in the flowing water of rivers, and riverine islands were surrounded by these powers (TAYLOR 2002, 4; MALLORY – ADAMS 2006, 438). Perhaps the political site at Mikhailovka and the ritual site at Generalka 2 were connected.

Settlement sites such as these, with diverse artifact assemblages and multiple radiocarbon dates on bones and teeth, are better guides to Yamnaya chronology than isolated graves. Nevertheless, radiocarbon dates from both graves and settlements demonstrate that the expansion of steppe pastoral nomadism by the early Yamnaya culture began between 3300–3000 BC.

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# Integration, mobility, migration

JOHANNES MÜLLER

## Abstract

*Available genetic results for the 3<sup>rd</sup> millennium BC in Central Europe have been interpreted in isolation from each other so far. A comparison of three supra-regional phenomena that were formerly interpreted as possible candidates of “migrations” displays strong differences of the data, which result in different interpretations. While in Central Europe in the cases of the Globular Amphorae and Bell Beaker Phenomenon no (mass) migration but phenomena of social separation and regional mobility can be assumed, only the Corded Ware Phenomenon remains as a candidate for increased mobility. Consequently, local and regional mobility and the integration of relatives and strangers play a much greater role in social transformation processes than has been expressed during recent discourses.*

**Key words:** *final Neolithic, steppe ancestry, integration, Yamnaya, Globular Amphorae, Corded Ware, Bell Beaker*

## Introduction

In recent years, narratives of migrations have shaped the discussion about transformations in the 3<sup>rd</sup> millennium BC, alongside aspects of environmental change and social resilience (FURHOLT 2019; HEYD 2017; KRISTIANSEN *et al.* 2017; OLALDE *et al.* 2018; SCHROEDER *et al.* 2019). In the discourses on such changes that have been held for at least a century, we look back on “Indo-European” migrations, which were advocated by Gustav Kossinna and Gordon Childe as prominent representatives (CHILDE 1925; 1929; KOSSINNA 1926). We know the ethno-historical narratives of migrations from the East, which are connected with the name Marija Gimbutas (GIMBUTAS 1994). This is contrasted with regional, system-theoretical explanatory patterns of processual or even cultural-historically oriented archaeology, which early on contrasted network concepts and acculturation models with migration models (CLARKE 1979; FURHOLT 2014; 2017; KLEIJNE 2019; MÜLLER 2001; 2015).

In the current scientific discussions on narratives, which have been constructed in particular on the basis of the interpretation of aDNA data, two opposing opinion makers can once again be found: on the one hand, the “migrationists” who interpreted almost all aDNA data in the direction of “migration”, and the “anti-migrationists” who mostly use other models of interaction to explain the new data in the overall context of social and cultural practices (FURHOLT 2017; 2019; KRISTIANSEN 2014; KRISTIANSEN *et al.* 2017; MÜLLER 2013b). The research-historical problem was recognised by most of them: the picture of migration movements corresponds relatively strongly to the projected narratives of Völkische Archäologie that we know from the beginning of the 20<sup>th</sup> century.

Even if the two interpretation models contradict each other, the question arises whether aDNA and isotope data on the 3<sup>rd</sup> millennium BC basically reiterate the incompatibility of both views – or whether there can be an ad hoc decision per case study with different interpretations. In principle, numerous genetic results from the 3<sup>rd</sup> millennium BC are available to answer this question. In particular, the new standard in which aDNA analyses are combined with isotope analyses and direct <sup>14</sup>C dating is extremely

helpful. This provides us with the opportunity to discuss the addressed question of “migration versus network interaction” on a more solid data basis in order to perhaps supplement popular narratives with scientific narratives or correct the former with the latter.

The basic prerequisite for this is a definition of terms which is often not provided in basic articles. For example, the ground-breaking studies of HAAK *et al.* (2015), OLALDE *et al.* (2018) and SCHROEDER *et al.* (2019) use the term “migration” without defining what migration is. The exception is Kristian Kristiansen, who, at least for the Corded Ware phenomenon, identifies groups of vagabonding young men from the East as conquerors of Scandinavia (KRISTIANSEN *et al.* 2017). Narrative becomes problematic when terms like “extinction” are used to describe changes. Especially as an author who comes from Germany one is very cautious here for well-known reasons (the ideological use of archaeological data during the time of National Socialism).

### Research question

In this respect, we will discuss the available genetic analyses and their interpretations for the 3<sup>rd</sup> millennium BC in order to make an assessment of the extent to which the phenomena of Globular Amphorae, Corded Ware, and Bell Beakers can be associated with what kind of mobility. In a second step, the complexity of the transformation processes will be briefly illustrated.

### Conceptual definition

*Mobility* is defined as an umbrella term for the most diverse forms of mobility (cp. BURMEISTER 2016; FURHOLT 2018), ranging from (1) changes of place of residence due to marriage or age-group rules, to (2) economically or ritually determined mobility of individual persons in exchange processes of goods or commodities, and on to (3) migrations. The term *migration* covers a wide range of different practices, starting with (1) demic migration of individual families from regions with strong population growth, through (2) immigration due to political interests, to (3) larger population movements that involve spatial changes for parts or entire societies, the latter caused, for example, by climate events, political instability, or social needs. *Acculturation* is understood as the adoption of innovations or entire ways of life by a local population. *Integration* means the joining together of non-local individuals in the local population either by maintaining different cultural practices or by adopting local practices or developing new hybrid cultural practices.

It should be noted that concepts of sedentarism or non-sedentarism may well need to be modified in the light of anthropological observations (cp. FURHOLT 2018; KELLY 1992; PIEZONKA forthcoming; RICCI *et al.* 2018; SCHARL – GEHLEN 2017). Ethnographic and ethnohistorical examples point to continuous mobility even in sedentary groups (e.g. the non-presence of part of the household for activities in other areas often for economic reasons) or elements of permanence even in mobile groups (e.g. the regular return to the same places often also for economic reasons, cp. GUNAWAN 2000). A general comparison of for example strontium isotope analyses of prehistoric Central Europe obviously confirms this picture (cp. MÜLLER 2013a, 11–12, Tab. 3). In this comparison, mobility rates within Neolithic and Chalcolithic societies of Central Europe were found to be consistently over 7% non-locals, on average about 30% non-locals.

## Migration or separation: Yamnaya, Globular Amphorae, Corded Ware, Bell Beaker

A comparison of the aDNA and isotope data of various phenomena of the 3<sup>rd</sup> millennium BC does not show a consistent picture with regard to forms of mobility.

With the ground-breaking paper by HAAK *et al.* (2015), the narrative of the “steppe ancestry” could be built up for the first time in 2015 on the basis of genome analyses. Thus, the reported 69 genome-wide datasets showed quite clearly that Yamnaya individuals have a specific genetic signature that is very similar to that found in Central European Corded Ware contexts from 2500 BC at the latest. The spatial distribution of individuals in Central Europe, which are genetically different from previous populations, is a relatively clear scientific fact. As a consequence, it was concluded that genetic admixture in the 3<sup>rd</sup> millennium BC resulted in a genetic population mix that corresponds to that of today’s Europeans. Haak and colleagues reconstruct a (massive) migration from the eastern steppe region to Central Europe.

While this interpretation was supported by some authors (HEYD 2017; KRISTIANSEN *et al.* 2017), the uniformity of the Yamnaya phenomenon was questioned by others (KAISER 2019) and further studies showed for parts of the Yamnaya groups a local or regional mobility pattern caused by organised transhumance (KNIPPER *et al.* 2018), which is fundamentally different from migration as invoked by HAAK *et al.* (2015). New analyses also indicate that “steppe ancestry” does not only occur west and northwest of the North-Pontic region due to Yamnaya or Corded Ware influences but is already present in the North Pontic region prior to the 3<sup>rd</sup> millennium BC and can also be detected in the “West” (IMMEL *et al.* 2020).

Despite this diversification of the data, which certainly puts the original narrative of a migration in a different light, it is relatively clear at the current state of research: There has been an increased infiltration of for example Central Europe by individuals “from the East”, i.e. a definite immigration. Although there are no published aDNA data available for the earliest Corded Ware, it could have been mainly male individuals. The few anthropologically determined individuals of the oldest Central European Corded Ware phase and the dominance of A-type hammer axes among the non-anthropologically determined Single Grave Culture individuals in southern Scandinavia at least point to such a scenario (HÜBNER 2005; GROSSMANN 2015).

Basically, however, we have to be very careful with the sole attribution of the Central European Corded Ware to Yamnaya. Recent studies show that the male Y chromosomes from Corded Ware contexts can only partly be assigned to chromosome R1b (cf. SJÖGREN *et al.* 2020), which is dominant in Yamnaya contexts. Instead, R1a is found dominantly so that it is also possible here to exclude migrations and instead postulate a common genetic pool for the entire Corded Ware area, which was only slightly infiltrated by Yamnaya males. Hence, we have to wait and see if the more precise temporal differentiation of Corded Ware graves indicates a possible direction of mobility, as R1a seems to be primarily in Baltic-north Russian areas known from pre-Corded Ware contexts.

The originally postulated “Corded Ware Migration” stands, even if contradicted by the recent evidence from Y-chromosome identification, in contrast to the scenarios that can be derived for the Globular Amphora Phenomenon (GAP), which also partially coincides with Yamnaya. In addition to the local and regional mobility (probably also due to economic reasons), which can be derived from isotope analyses comparable to the studies on the eastern Yamnaya area, the aDNA analyses conducted so far point to a regional origin (SCHROEDER *et al.* 2019). Even though overall comprehensive analyses of GAP DNA are yet missing, the study on the mass grave of Kosyce in Lesser Poland in particular proves that, at least in Central Europe, GAP individuals do not differ from the previous population. Within the social and economic practices of the Funnel Beaker Societies, intentional social separation obviously occurred, from which Globular Amphora elements emerged. Those phenomena resulted from, on the one hand,



new rituals that were developed for social reasons (keyword cattle burials) and, on the other hand, from the emphasis on a livestock component that is present in areas geographically particularly suitable for livestock farming (cf. JOHANNSEN – LAURSEN 2010). Consequently, based on the aDNA analyses, we understand the Globular Amphora phenomenon as a newly emerging everyday social practice developed by parts of the indigenous population of Central Europe. Of course, this does not exclude the possibility that outside Central Europe, for instance towards Ukraine, migrations from the Globular Amphora core area may have taken place. However, there is still a lack of data on this at present.

If we turn to the third supra-regional phenomenon of the 3<sup>rd</sup> millennium BC that is present Central Europe, the well-known studies on the genome analyses of the Bell Beakers (BB) are available (OLALDE *et al.* 2018; SCHROEDER *et al.* 2019). Here, again, it becomes clear that in Central Europe, while there are clear differences in material culture and a distinct, clearly intentional re-interpretation and alteration of the Corded Ware burial rituals, individuals in Bell Beaker graves do only partly differ from the previous genetic constellations of the Corded Ware Phenomenon: A similar kind of “steppe ancestry”, as was partly already “introduced” by the Early Corded Ware, is also present in Central European Bell Beakers. In fact, even among the Iberian Bell Beaker individuals, the predominant absence of “steppe ancestry” is an indication that there is no big difference between the Bell Beaker and the native pre-Bell Beaker Iberian population. As a contrast to these social and cultural BB networks, the BB “invasion” of the British Isles took place as an immigration based on the genetic data.

It seems to be of great interest that especially men with the Y-chromosome R1b dominate at least in two investigated Bell Beaker burial groups in southern Germany (SJÖGREN *et al.* 2020, 9). Obviously, it is these lineages, which differentiate themselves from the rest of the population within the Corded Ware and initiate the social separation towards the Bell Beakers. It should be clear that network relations still exist in Eastern Europe.

In fact, a look at the dating of the graves with R1b individuals proves that the R1b Yamnaya graves do not overlap chronologically with the R1b Bell Beaker Graves (they are even of a different type of R1b). However, this is the case with the R1b individuals from catacomb graves. Basically, the Central European Bell Beaker phenomenon is largely contemporaneous with the catacomb grave phenomenon of the North-Pontic steppe regions. Even though there are still far too few genetic study genes for the catacomb grave communities, three men with Y-chromosome haplogroups R1b1a2 have been recorded from Rasshevatsky 4 (Kurgan 1 and 2) and Sharakhalsun 6 (WANG *et al.* 2019, supplementary information, samples RK4001, MK4002 and SA6003). As these tombs date 2620–2210 BC, an interchange between Bell Beaker and Catacomb phenomena seems possible. A Yamnaya expansion, as postulated three years ago, can possibly be excluded altogether.

In the three scenarios that have been discussed, we can therefore identify underlying factors based on the genetic analyses, which require different patterns of interpretation (cf. *Table 1*). What is responsible for the fact that an infiltration of Central Europe by “foreign” men took place from 2800 BC at the latest? Since no demic pressure can be reconstructed, are these e.g. aggressive acts of secret male associations (as argued by KRISTIANSEN *et al.* 2017)? But what about female agency here? We should also ask why native women started to prefer newcomers as mating partners. In the case of the Globular Amphorae, too, the question arises as to which local and regional causes are responsible for the emergence of new social practices. Is this economic specialisation towards an emphasis on a livestock component or is this a new ritual orientation or both – but why? The same question, but with regard to a different evidence, arises with the Bell Beaker phenomenon – why does one population group in Central Europe socially separate from the other – almost dialectically?

*Table. 1. The interpretation of the palaeo-genetic data suggests three different patterns of supra-regional phenomena of the 3<sup>rd</sup> millennium BC in Central Europe*

BC	Supra-regional phenomenon	Migration?	Processes
ca. 3200	Globular Amphorae	No migration/new social practice	Separation within crises?
ca. 2800	Cord Ware	Increased mobility	Separation and a model of intruders <i>versus</i> changed female taste for males
ca. 2600	Bell Beaker	No migration/new social practice	Separation/social tension?

In this respect, we can already answer the question posed above at this point: Both the classical advocates of an interpretation of genetic data in the direction of migration and the anti-migrationists are right and wrong. For the 3<sup>rd</sup> millennium BC, we are being referred to an immigration process and two processes of social separation within local and regional communities on the basis of the data. Notwithstanding this, local and regional mobility which existed in an institutionalised way but have nothing to do with the question of “migration” are still relevant. Accordingly, of the three phenomena identified as migration candidates in the hundred-year history of research, only one can be causally associated with (mass) migration, while the other two are mainly characterised by social separation processes and exchange networks. Irrespective of this, there is a basic constant of mobility, which is obviously present in every society as a “default mode”. In this respect, the observable rates for the phenomena mentioned do not differ from other Neolithic societies in Central Europe (MÜLLER 2013a, 11–12).

### Integration and diversity

From an anthropological and archaeological point of view, questions of social integration and diversity thus should come much more to the fore in the interpretation of genetic data than is currently the case. Instead of emphasising mass migration events, which might only be proven in one case for Central Europe in the three cases discussed, we can examine the genetic data against the background of the establishment of social and cultural practices.

Against this background, for example, it has already been shown in various cases for the South Cimbrian peninsula, how for example Globular Amphorae are not recognisable as a separate ceramic deposit in well-digested megalithic tombs, but that here obviously a joint deposit with Funnel Beaker Ceramics of MN III/IV has taken place (BROZIO 2016). In Mecklenburg, Germany, it is also observed that in the megalithic tombs Globular Amphora pottery does not occur in the filling soil of the burial chamber but together with TRB pottery in the floor area of the collective tombs (NAGEL 1986). A separate occurrence of Globular Amphorae is also not the case on the few known settlement sites (like Berlin-Stellmoor Heidmoor or Parchim-Löddigsee with later TRB: BECKER 1992; CLAUSEN 1996). Since no pure Globular Amphora graves or settlements assemblages are known in northern Germany and southern Scandinavia, we can assume a synchronous use of different vessel forms with different vessel types by the same social collectives. This is all the more important as the use of special oils for Globular Amphorae has been proven for the first time (WEBER *et al.* 2020). From a conservative typological point of view, this observation is likely to be of particular significance, since the distribution centres of the

*Nackenkammäxte* with oval shaft holes, which are ascribed to the Globular Amphora Western Group, occur particularly along the southwest Baltic coast (WOIDICH 2014). They probably evolved from the D2 type axes, which are distributed in a congruent manner (BROZIO 2016; RINNE 2012).

Independent of this, both palaeoecological investigations and the frequency of above-ground visible grave monuments show that the occurrence of the Globular Amphorae coincides with a reduced openness of the landscape, a reduced human impact and the end of the construction of megalithic tombs (BROZIO *et al.* 2019). On excavated Funnel Beaker Period settlements, a change in construction methods and also a change in burial customs towards more frequent individual burials is indicated. We can therefore assume that in such a phase of crisis or transformation, corresponding new practices were developed and adopted. This phase is apparently ended around 2800 BC, whereby individual grave elements can be identified very differently from region to region. For example, in the northern German and southern Scandinavian region, three innovations can be distinguished (BROZIO 2020; MÜLLER *et al.* 2020): Small regions in which new early Corded Ware burial mounds are now being built for the first time and a new regional pattern is being created (e.g. West Holstein), those in which Corded Ware symbols are more likely to be destroyed (e.g. the A-hammer axes in East Holstein: cp. SCHULTRICH 2019) and those in which the new symbols are integrated into traditional practices (Zealand). Thus, there are likely to be very different patterns of reaction to the immigration scenario.

## Consequence

The example presented points to how different the development cultural and social practices can be. The quite high degree of social diversity and integration we can now detect makes it clear that a new stage in the evaluation of genetic data could possibly focus less on questions of migration and more on questions of cultural and social reaction patterns.

## Acknowledgments

The research was performed in the framework of the CRC 1266 “Scales of Transformation – Human-Environmental Interaction in Prehistoric and Archaic Societies” (DFG, German Research Foundation, SFB 1266 – 290391021) and the Excellence Cluster “ROOTS – Social, Environmental and Cultural connectivity in Past Societies” (EXC 2150 ROOTS – 390870439).

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# **Resisting the ‘violence-inequality complex’ – A new model for third millennium BC mobility in Europe**

MARTIN FURHOLT

## **Abstract**

*Since the discovery of considerable human genetic turnover in Europe after 2900 BC, narratives of massive steppe migration events have been formulated which largely avoid explanation of this rise in human mobility. This paper attempts to present a model that sees a significant uptick of the spatial extent of prehistoric social mobility as the result of a fundamental transformation of social relations which sees the emergence and combination of a set of interrelated social pathologies, such as the aggrandisement of single individuals, newly fixed and unequal binary gender roles and male warriorhood – the violence-inequality complex – which culminates in and is then further driven by the establishment of early states and imperialism in Mesopotamia and Egypt. This involves a re-definition of politics and power from a collective and socially embedded mode towards an individualistic, confrontative and coercive mode. This heavily disrupting and traumatising experience, together with economic pull- and push-factors should be seen, it is argued, as the main trigger for the uptick in mobility and the development of new social formations in Europe, such as the new single burials of the 3<sup>rd</sup> millennium BC, which are to be best understood as ideological arenas for coping with, adopting and resisting the new violence-inequality complex.*

**Key words:** 3<sup>rd</sup> millennium BC, Mobility, Corded Ware, Yamnaya, Early State Formation

## **Introduction**

In 2015, geneticists found signs of a marked discontinuity in the gene-pool of humans recovered from central, northern and western Europe in the early-to mid-3<sup>rd</sup> millennium BC (HAAK *et al.* 2015; ALLENTOFT *et al.* 2015). Along with this finding, different rather crude scenarios were created around the aDNA data, dominated by outdated and flawed ideas of archaeological cultures as representing closed and static social units and human mobility as a caricature of the romantic idea of “Völkerwanderung” (or peoples’ migration – a single-event mass migration from place A to place B). In these scenarios, an ominous ‘Yamnaya people’ – represented by the individuals buried in the highly heterogeneous Yamnaya burials in the Ukrainian and southwestern Russian steppes, migrated into the region mentioned, and thus – allegedly – created Corded Ware (HAAK *et al.* 2015), later Bell Beakers (OLALDE *et al.* 2018). In 2017, KRISTIANSEN *et al.* presented a more sophisticated model that saw only a largely male subset of steppe populations migrating westwards, there mixing with local women, in this way creating a new set of material culture and burial rituals (KRISTIANSEN *et al.* 2017), but provided little in terms of an explanation.

One fact that is evident, from both the archaeological and the aDNA record is that there are marked changes in the burial rites, in material culture, and forms of settlement, and that this coincides with changes in the gene-pool, indicating increased mobility (FURHOLT 2019; 2021). Looking at the 3<sup>rd</sup>

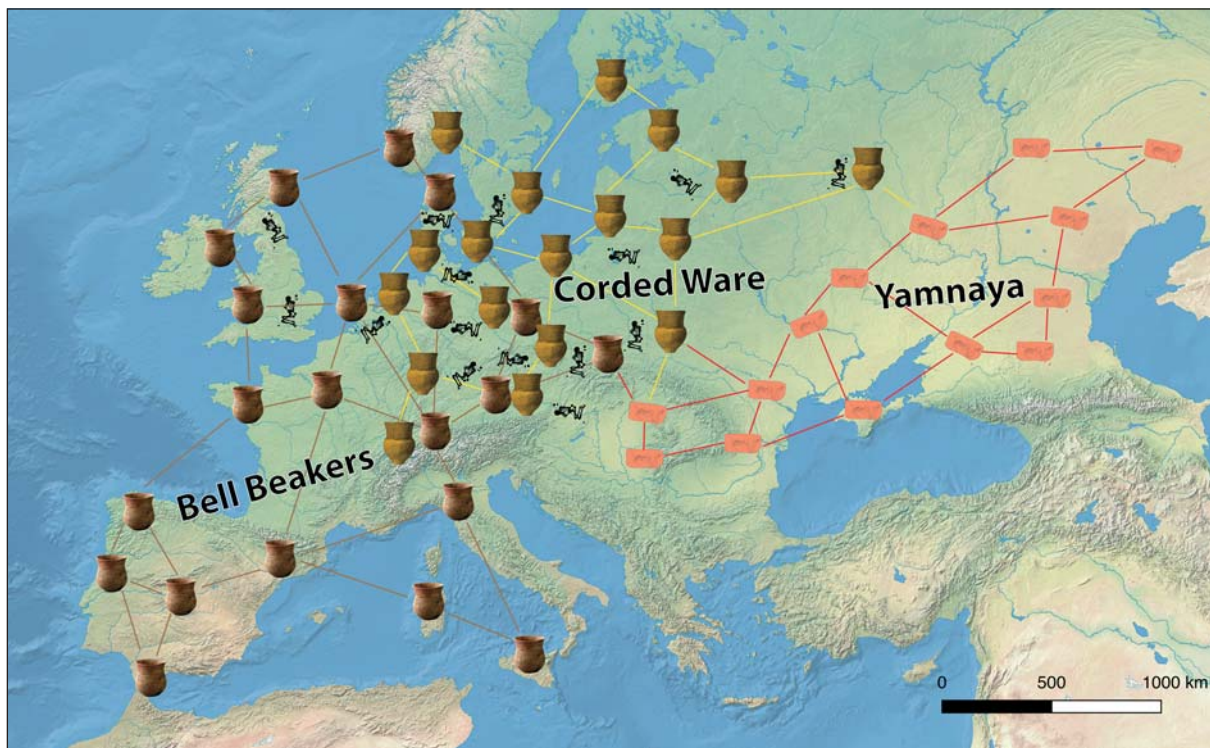


Fig. 1. Map displaying the spatial distributions of the three most prominent archaeological units during the 3<sup>rd</sup> millennium BC, Yamnaya, Corded Ware and Bell Beakers. Intersecting Corded Ware and Bell Beakers are the newly emerging single burial complex

millennium BC in Europe and western Eurasia (Fig. 1), such an extraordinary concentration of changes – an uptick in mobility, new burial customs, new items of material culture, partly new settlement patterns – affecting large regions needs some extraordinary explanation, some decisive driver. Yet possible reasons for these changes including the severe uptick in mobility (or, as others would put it, the mass migration) are not much focused upon. ANTHONY (2007) puts pastoralist ways of life into the centre of an explanation for the new mobility, arguing that the invention of the wheel and wagon-technology as well as the domestication of the horse (which is contested for this early period) and horse-back riding (which is even more contested), provided the technological pre-requisites for the creation of a new mobile, pastoralist way of life in the steppe (ANTHONY 2007, 459–462), which then – although Anthony is not explicit why – leads to an expansion of the mobility radius in all directions, including into Europe.

KRISTIANSEN *et al.* (2017) see the sudden move out of the steppes as a typical pastoralist behaviour, hinting at a male primogeniture system of inheritance as a cause for disenfranchised younger sons to migrate. However, systems of inheritance are unknown for the 4<sup>th</sup> and 3<sup>rd</sup> millennium eastern European steppes, as are the nature of property relations, or family structures. Also, systems of primogeniture were widespread in history, and probably in prehistory as well, and there is no strong association of primogeniture and larger scales of emigration. KRISTIANSEN *et al.* (2017) also bring up pull-factors, such as a weakened or reduced European Neolithic population due to plague. This would strengthen the argument when combined with the idea of primogeniture, but such an epidemic scenario remains – so far – speculative, and there are good reasons to doubt the virulence or mortality rate of the *Yersinia pestis* bacteria found in late Neolithic individuals (FUCHS *et al.* 2019).



### A flawed premise

In my view, one main flaw of the models we have so far seen being used to explain the new aDNA data in the 3<sup>rd</sup> millennium BC is having identified the changes in the gene-pool with single migration events connected to specific individual – and purely hypothetical – social groups – ‘the Yamnaya’ ‘the Corded Ware’, etc. This comes from an underlying way of thinking about prehistoric communities as clearly bounded, stable entities, which is not more than a western modernist stereotype about past social organisation. There is no evidence backing it up. On the contrary, the anthropological record of state-less and small-scale societies is clearly pointing towards fluid social borders and dynamic social group composition as a more likely model (e.g. CAMERON 2013). The archaeological evidence also shows, throughout the Neolithic in Europe, that settlement communities are not closed social entities, but instead in most cases include a considerable percentage of people who with a high probability were born somewhere else, but in the course of their lives switched residence groups (BENTLEY *et al.* 2002; BENTLEY *et al.* 2003; BENTLEY *et al.* 2008; BENTLEY *et al.* 2012; BRANDT *et al.* 2014; HAAK *et al.* 2008; KNIPPER *et al.* 2017; PRICE – GRUPE – SCHRÖTER 1998). To avoid a paradigmatic shift in our view of prehistoric communities, these large number of non-locals in Neolithic settlement communities are often explained by female exogamy in a patrilocal marriage system (SJÖGREN – PRICE – KRISTIANSEN 2016; KRISTIANSEN *et al.* 2017). Yet this is only one possible explanation and does not account for all the evidence for inter-community mobility that has been found (KNIPPER *et al.* 2017; FURHOLT 2018; HOFMANN 2020).

As soon as we are willing to accept the idea that social groups in the Neolithic were fluid, that social mobility was widespread, we will be able to move one step further towards understanding 3<sup>rd</sup> millennium BC mobility patterns. The notion of single, or at least temporally circumscribed migration events becomes less compelling, because it is clearly linked up with the premise of closed and ‘usually’ non-mobile communities. When inter-community movement is actually seen as the norm, the most tangible change occurring around the turn to the 3<sup>rd</sup> millennium BC is that the radius of these movements is being widened in a way that connects such groups and communities that had been isolated from each other before, for example by ecological or geographical boundaries (FURHOLT 2021).

The directionality of this mobility uptick has mostly been portrayed as clearly one-sidedly from the East to the West (e.g. HAAK *et al.* 2015; ALLENTOF *et al.* 2015). But this now seems to be more ambiguous, as WANG *et al.* (2019) showed a significant inclusion of European Neolithic ancestry into Caucasus and Steppe populations in the 4<sup>th</sup> millennium BC – indicating the direction from the West to the East. At the same time steppe ancestry is found in individuals connected to the South-eastern European Copper Age and to Trypillia megasites (IMMEL *et al.* 2020). In the 3<sup>rd</sup> millennium BC, where we can assume a major uptick in mobility around and after 2900 BC, the overall SE-NW directionality seems more pronounced. But at the same time there seems to be human mobility from the West to the East in connection to the occurrence of the Corded Ware Fatyanovo group in Russia (NORDQVIST – HEYD 2020). And when we zoom out, the spread of burial customs which shows similarities to the steppe-based Yamnaya phenomena is not restricted to a SE-NW direction, but instead, the overall movement seems to go in several directions away from the steppe regions north of the Caucasus (NARASIMHAN *et al.* 2019). The question thus still remains, what reasons we can identify for the overall mobility uptick.

### **A possible trigger for 3<sup>rd</sup> millennium BC mobility**

Looking at the different explanations proposed so far, what seems odd is the almost total silence regarding the fact that there is a temporal coincidence of these phenomena with one of the most consequential socio-economic transformations in Old World history. At around 2900 BC, long-lasting processes of urbanisation and centralisation culminated in the establishment of early state systems in Mesopotamia and Egypt. So, here we have this dramatic and unprecedented process taking place contemporaneously to the main turnover found in Europe, in a region in close vicinity to the region from which these migration streams are supposed to have initiated. It seems really odd how little attention this coincidence has received.

The reason for this neglect is probably that most modern scholars do not acknowledge the severe and traumatic nature of early state formation, because it is largely seen as something positive, natural, teleologically justified, a stage to be reached in the big social evolutionary scheme. For us as modern scholars, who have been brought up in a well-established and virtually all-encompassing system of state power, it is hard to imagine how the experience of early state formation must have been for prehistoric people, who came from very different social systems, who were most probably used to some form of collective decision-making, or at least forms of rule which were embedded in personal social bonds, open for challenge and relatively easy to evade (FURHOLT *et al.* 2019; FURHOLT 2021). It is hard to imagine the horror of the first appearance of a system, in which an anonymous bureaucratic apparatus wielded impersonal, overwhelming coercive power, at a scale that could not be matched by traditional lineage-based or tribal resistance. On the other hand, growing urban centres will also have attracted people, and created a demand for resources, which will have had implications for communities relatively far away (e.g. ALGAZE 1993; 2009; MCMAHON 2019). In any case, and probably as a combination of push and pull factors, the urbanisation and state formation processes will have had drastic impacts on the communities living in their vicinity. A re-arrangement of social groups and a general uptick in mobility seems to be well explainable by the effects of the evolving early states.

Yet, it is too simplistic to talk about 3<sup>rd</sup> millennium BC social changes and mobility uptick being ultimately triggered by Near Eastern state formation processes. Instead, what we can see are transregionally visible long-lasting processes of social transformations that culminated in urbanisation and state formation in some places, and in an uptick of mobility and social changes elsewhere, such as in Europe. To make this point, I will discuss two main issues. First, I will argue that the social content displayed in the context of the changes studied in the European archaeological record of the 3<sup>rd</sup> millennium BC can be clearly connected to the changes culminating in the Middle East, and second, I will justify the argument by discussing the timeline of changes in the wider region of Western Eurasia.

### **The nature of social change in the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC in Europe**

Among the different dimensions of change we detect in Europe after 3000 BC, the ones connected to burial rituals are the most visible, and also the ones most clearly connected to the change in the gene-pool found through aDNA analyses (as discussed in FURHOLT 2019). What we can see is the emergence of a new distinct complex of burial customs (*Fig. 2*), even if this is often obscured by the fact that this complex is associated with archaeological materials conventionally assigned to different archaeological units of classification, namely Corded Ware, Bell Beakers and several early Bronze Age groups. To clarify the situation, I have previously (FURHOLT 2019) argued that it makes sense to identify this new burial complex with the distinct label ‘SGBR’, referring to the not-so-elegant “Late Neolithic/Early

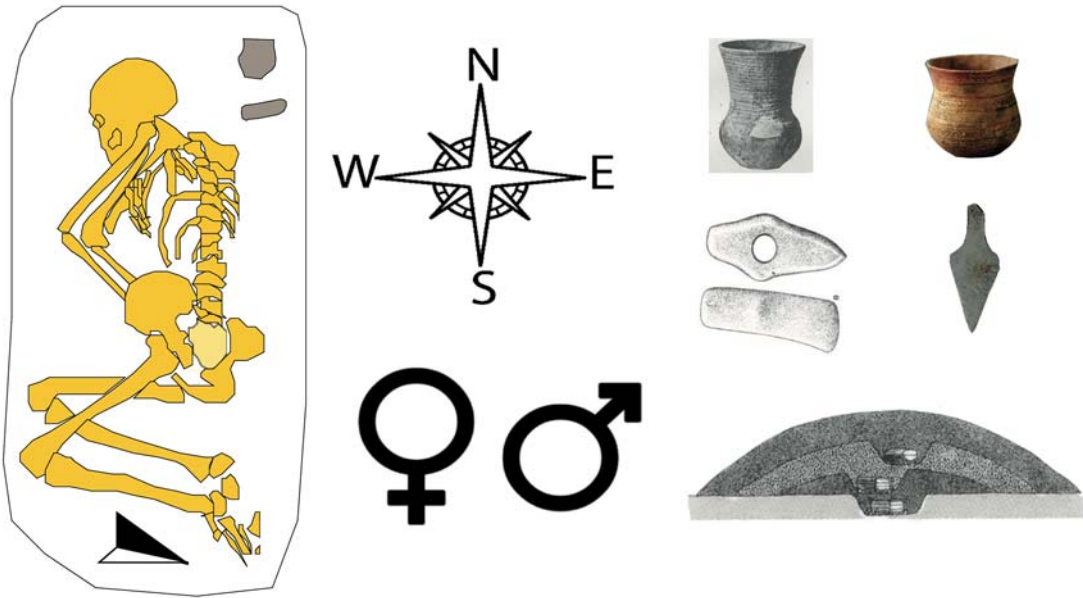


Fig. 2. The main elements of the new, 3<sup>rd</sup> millennium BC single burial complex in Europe (after FURHOLT 2019): Individual aggrandisement (the single burial in a crouched position, under a burial mound), male warriorhood (specialised weapons in male graves), gender differentiation (reflected by body orientation rules). Prominent also: drinking vessels of different forms: Corded Beakers, Bell Beakers or Bronze Age cups

Bronze Age Single Grave Burial Ritual”. The kind of changes in burial rituals highlighted in this new SGBR complex also indicate their social values and contents. As has been long recognised, there are three emerging new features affecting social relations expressed through these new burial customs, which were much less visible in previous periods in Europe. They are, firstly the aggrandisement of certain individuals, secondly, the prominence of specialised weapons and specialised warriors, and thirdly, clearly defined and binary gender roles. In addition, the role of beakers and cups would indicate a more important role played by drinking, presumably alcohol.

### Individual aggrandisement

The aggrandisement of certain individuals is emphasised by the new custom of individual burials in burial mounds, which create a visible, durable burial monument. These burial mounds often contain more than one individual burial, but there is in most cases a clear primary individual burial for whom the mound was initially erected (e.g. GLOB 1944; HÜBNER 2005; BOURGEOIS 2013). In the previous Neolithic period in Europe, most burials are either individual burials without or with less visible or durable aboveground marking, or monumental mounds with collective burials. There are, on some early burial grounds, instances where social differences might have been expressed by the objects interred into the burials (JEUNESSE 1997), but these are regionally variable and there is no general trend within Neolithic societies, very much opposite to the situation since the 3<sup>rd</sup> millennium BC. The significance of earlier instances of individual aggrandisement will be discussed below, in the context of the overall timeline of change.

### **Specialised weapons, the warrior and their significance**

The prominence of specialised weapons in SGBR burials, first mainly shaft-hole axes, often referred to as ‘battle-axes’, later in the forms of daggers and swords, is equally obvious, and has been amply pointed out, as has been their overall association with individuals of the male gender, indicating the idea of a new social role of specialised, mostly male fighters, or warriors, something we do not find in most of the preceding Neolithic period (VANDKILDE 2006; 2007; SCHULTING 2013). The notion of a specialised weapon refers to a tool that, by virtue of its form and functionality, has been most likely intentionally produced to kill, injure or threaten human beings. This excludes adzes or axes, spears or bows and arrows, whose primary function was to be used as tools for hunting and wood-working. While these tools could also be used, and clearly were used as weapons (CHAPMAN 1999), there remains a clear qualitative difference between them and tools primarily designed as weapons.

### **The fixed binary gender concept**

The third element strongly emphasised in the SGBR burials is a binary gender concept. This does not have to be discussed here in too much detail, as ROBB – HARRIS (2018) recently made the very convincing argument of a clear divide between the situation after 3000 BC in Europe and western Eurasia, and the situation in the preceding Neolithic period. Before 3000 BC, gender seems to be less of a prominent characteristic of human individuals in Neolithic societies and its relevance and display more situational. By contrast, since the 3<sup>rd</sup> millennium BC, and probably from there on until today, gender constitutes the single most important social role when it comes to classify, categorise, and interact with humans. This does of course not exclude a more differentiated and varied negotiation of gender, but it seems to set a (binary) standard that does not seem to have been present in previous periods. There are earlier instances of binary gender differentiation, like the Southeastern European Copper Age (5<sup>th</sup> millennium BC) in which binary gender is regularly differentiated in the burial record, a custom that however ceases in prominence in later periods (VANDKILDE 2007).

These three elements – the individual aggrandiser, the armed male warrior and the new prominence of a binary gender concept, are interlinked in those new burials of the 3<sup>rd</sup> millennium BC, and this interlinkage can be, I would argue, interpreted as the expression of fundamental changes in social identities, and social relations as well as ideological values.

They are co-occurring with the severe uptick in mobility, and these new SGBR burials are closely associated with the new genetic component (“steppe ancestry”). Given the temporal coincidence to the fundamental social transformation that is taking place at the same time in the Middle East, it is worth looking closer at a possible connection between these phenomena.

### **The context: Urbanism and early state formation**

The emergence of urbanism and early states in the Middle East (*Fig. 3*) represents the most visible manifestation of a number of marked social changes that are good candidates to explain the uptick in mobility transforming communities in Europe running up to the early 3<sup>rd</sup> millennium BC. Urbanism and early states emerge in interconnected processes in the Middle East (CHILDE 1936; TRIGGER 2003; POLLOCK 1999; ALGAZE 2009; WENGROW 2010). The new urban systems of the 4<sup>th</sup> millennium BC, which eventually led to early state formation in the early 3<sup>rd</sup> millennium BC are defined by population



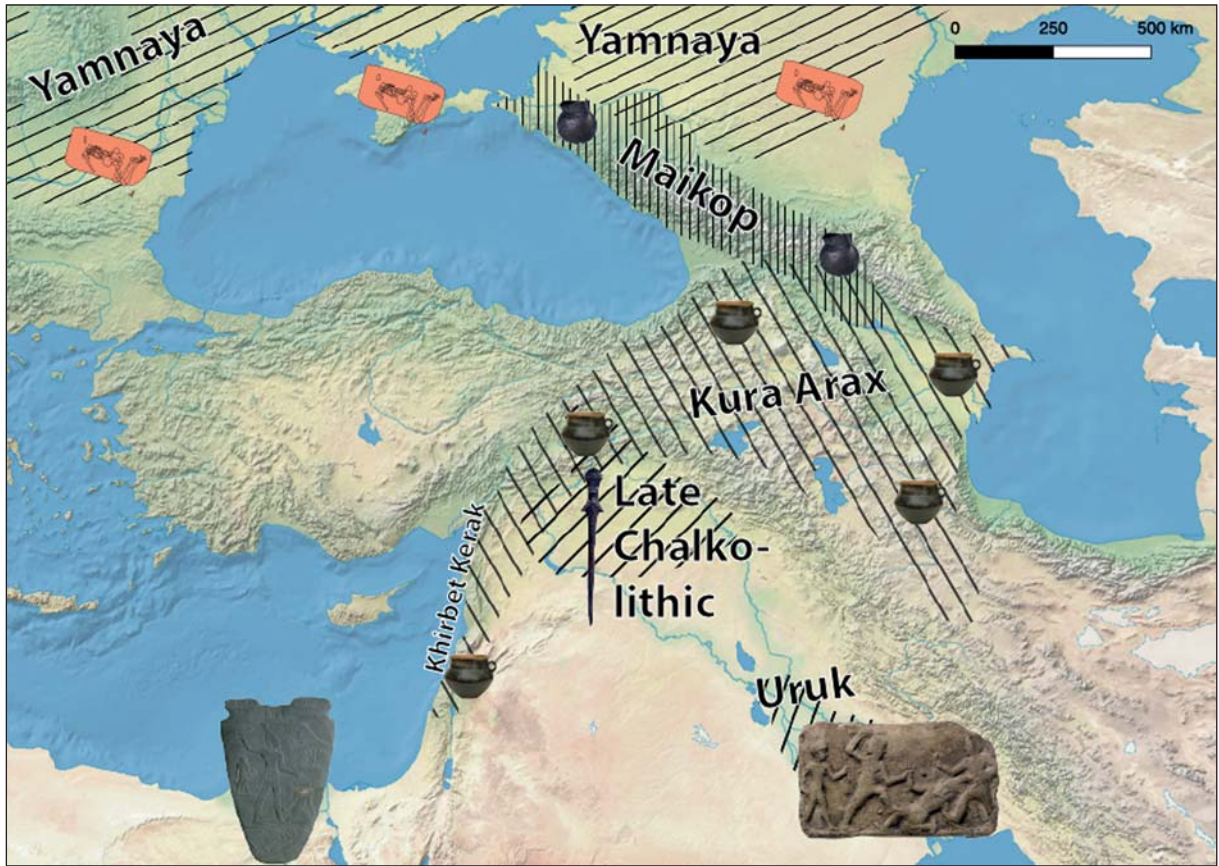


Fig. 3. The archaeological units in the Caucasus region and the Middle East in the late 4<sup>th</sup> millennium BC, illustrating the connection between Mesopotamian Urbanisation processes and communities of the Caucasus and Steppe regions

agglomeration in combination with regional centralisation, social stratification, and bureaucratic government capable of using coercive force at a larger scale (e.g. POSTGATE 1994; CARNEIRO 1970; WRIGHT 2006; McMAHON 2019). The new social features most prominently displayed in the newly established SGBR burial complex resemble key components of this urbanisation process.

HAMBLIN (2006, 34) argues that during the late Uruk Period (3500–3000 BC), the ‘military threshold’ was crossed, that is the point after which warfare “...becomes endemic in a region, and at which all peoples in a region are forced to militarize their societies” (HAMBLIN 2006, 16). This crossing of the military threshold would be, following Hamblin, visible in “...monumental building leading to fortifications, the development of ideological art, much of it with military themes, and the rise of social stratification with domination by martial kings and elites” (HAMBLIN 2006, 35–36).

A central administration and the possibility to amass and concentrate surplus production created the possibility to organise armies at a larger scale, visually represented by a warrior-like leader (HAMBLIN 2006, 36). Both in Egypt and in Mesopotamia, the emergence of an early statehood was a process connected to imperialism, driven by the demand for resources (ALGAZE 1993; HAMBLIN 2006, 21). This imperialism was fuelled by the invention of the specialised warrior, forming a new class of warrior aristocracy, and finally warrior kings (e.g. Gilgamesh in Uruk and Narmer in Egypt). These two mythical early kings combine in themselves two of the three main elements most prominently displayed in the SGBR burials in Europe, in the more extreme version of male warrior elites and male martial kings.



So there seems to be a good start for an argument concerning a socio-political and ideological link between those early state institutions and the new social values displayed in European burial mounds. When it comes to the third element, the new gender roles, things are less straightforward. Obviously, the connection between specialised warriorhood and male gender could be seen as leading to a growing gendered imbalance in the possibility to make use of coercive violence. But that does not explain the emergence of fixed gender-roles and their prominent display in the burial record.

But there are older, often-repeated ideas, which might be of interest here. Friedrich ENGELS (1970) argued that patriarchy emerged in connection to the development of archaic states, and saw an interconnection between the emergence of private property, the emergence of economic dominance of men, male control over female sexuality, and the commodification of sexuality. Gerda LERNER (1987) has further explored this line of thought. According to her, patriarchy would constitute a historical phenomenon that gradually developed in relation to changing modes of production over time. Following MEILLASOUX (1972) and AABY (1978) she holds that a reification of women's reproductive capacities would have started to develop already in the Neolithic as a consequence of the agricultural economy and the importance of widening the workforce of a social group, as women were increasingly exchanged as marriage partners between communities. She argues that over time social systems developed, in which women increasingly constituted a group with less autonomy and rights than men. This constituted, she argues, the original experience of inequality among humans, which facilitated the development of other, later forms of social inequality and oppression, like slavery (LERNER 1987, 77). Most decisive changes she connects to the Urban revolution, which she describes (following ENGELS 1970) as a transition from kin structures to the patriarchal family, in which the subordination of women is institutionalised and codified into law (LERNER 1987, 54). This is connected to a consolidation of military elites, kings, and the institutionalisation of slavery. Important to her argument is also the institutionalisation of prostitution, the most obvious symptom of the commodification of sexuality. She argues that one important effect the new complex of commodified female sexuality in the context of prostitution and slavery would have had on people living in the periphery of the new urban centres would have been a more strict control of female family members in order to protect them from these dangers, culminating in the idea of family honour and the veiling and hiding of women from public site.

Lerner's arguments concerning the changing role of gender relations during the Neolithic are largely speculative, and the rather fluid gender representation in the Neolithic archaeological record (ROBB – HARRIS 2018) actually weakens that line of argument. When it comes to the role of gender in the urbanisation process, her thesis is better backed by archaeological and historical evidence. POLLOCK – BERNBECK (2000) use early iconography from the late Uruk period to demonstrate the existence of gendered labour tasks together with an almost total avoidance of portrayals of men and women together. Women are primarily shown as menial labourers, while men are shown as mastering wild animals, fighting or taking captives, as well as performing supervising positions. Pollock and Bernbeck argue for the existence of an ideological system that excluded women from higher positions in the human hierarchy, even if this was masked by the idea that this was all serving the female goddess Inanna (POLLOCK – BERNBECK 2000). Already in Sumerian collections of law, restrictions on female sexuality, with laws relating to defloration, extra-marital sex and abortion (ASHER-GREVE 1997), document the existence of this main component of patriarchy.

This is not the place to thoroughly discuss the history of patriarchy in western Eurasia. I only want to point out, as did ROBB – HARRIS (2018), the fact that gender was clearly not the most prominent social characteristic of human beings as represented in the burial ritual during the Neolithic of Europe. In fact, in Western Eurasia, this only starts to be the case – in a regular and enduring manner – since the 3<sup>rd</sup> millennium BC, most clearly associated with single burials, kurgan burials, SGBR, and the enhanced

mobility detected by aDNA studies. This new obsession with gender differences coincides temporally with the discussed signs for an establishment of a patriarchal system in Mesopotamia.

To sum up, all the three main social traits displayed in the SGBR burials of Europe, are social institutions that were, although not invented, at least heavily reinforced in the course of the late 4<sup>th</sup> millennium and early 3<sup>rd</sup> millennia BC urbanisation and state formation processes in the Middle East: The aggrandisement of the individual, specialised warriorhood and marked and prominent binary gender roles. In the SGBR burials these three prominent social motifs are interconnected. The aggrandised individuals are in the large majority of cases males, always heavily armed, and specialised warriorhood seems more generally to be a role connected to male individuals too, specialised weapons being an important part of the gender-specific display.

### The timeline

The hypothesis that urbanisation processes in the Middle East could be connected to 3<sup>rd</sup> millennium BC uptick of mobility in central and western Europe could meet the objection that the timelines of change are problematic, because precursors to the three new social motives discussed here – gender differentiation, specialised warriorhood, individual aggrandisement, can be found centuries, even millennia before early state formation. This is, however, not a problem for the argument, because it is not claimed that these social phenomena were actually invented in or by the early urban or state societies. On the contrary, urbanisation and state formation in the Middle East should be seen as processes of culmination of several and diverse long-term trends and a set of developments that we in parts or in different forms also find in other regions of the old world. Especially with the timeline of early urbanisation starting somewhere in the mid-5<sup>th</sup> millennium BC, those phenomena appear, co-occur and disappear in different parts of Europe and the Middle East. Incipient social stratification processes in southern Mesopotamia have been identified during the late Ubaid period (4400–4200 BC), which is roughly contemporary with the Copper Age in South-eastern Europe, where places like the Varna cemetery also indicate a significant level of social inequality. While this does not lead to any kind of durable system of social stratification in Europe, in Mesopotamia, there is a process of rising centralisation, and an urbanisation process in southern Mesopotamia starting during the 4<sup>th</sup> millennium BC Uruk Period (McMAHON 2019). A similar process, most likely independent from the southern Mesopotamian process, took place in northern Mesopotamia during the Late Chalcolithic (LC) 2 and 3 periods in northern Mesopotamia, that is 4200–3600 BC (OATES *et al.* 2007; UR *et al.* 2007; ALGAZE 2009; STEIN 2012; McMAHON 2019). Individual aggrandisement, archaeologically visible through the emergence of individual burials in monumental burial mounds, or kurgans, is a phenomenon that starts in the Caucasus region, north of the area just discussed here. The earliest burial mounds known in the wider area are connected to the so-called Maykop phenomenon, that starts at the beginning of the 4<sup>th</sup> millennium BC (HANSEN *et al.* 2010). The most famous eponymous large burial mound of Maykop, with its rich gold and copper equipment and rich iconography, which has led to the discussion of this as a “kingly” burial (HANSEN 2010), dates around 3700 BC. A similarly large kurgan from Nalchik could be even older (KORENEVSKIJ 2010). This indicates that processes of the selective aggrandisement of individuals that culminated in the 3<sup>rd</sup> millennium BC in Mesopotamia and Egypt might represent longer-term and also regionally more extended processes, at least including regions as far as the Caucasus region in the North.

Maykop kurgans are not the oldest burial mounds we know of. North of the Caucasus, the burials of the Suvorovo type around the delta of the Danube, seem to have had kurgans on top of them already in the second half of the 5<sup>th</sup> millennium BC, while the connected Novodanilovka graves in the Dniepr-

Azov-Steppes seem to have had other kinds of sub-surface markers, such as stone cairns (ANTHONY 2007, 252). In the same period, but far away in north-western Europe, there is a different tradition of burial mounds. This tradition probably starts with long barrows of the Passy-type in the Paris basin, dating around 4500 BC (MIDGLEY 2005; FURHOLT – MÜLLER 2011; CHAMBON – THOMAS 2011). While early non-megalithic long-barrows (MIDGLEY 1985; RASSMANN 2011) and megalithic burials in Western Europe since the later 5<sup>th</sup> millennium BC (MIDGLEY 2008) often show a combination of individual burials and monumental landmarks, this is in most regions soon combined with or replaced by collective burial customs.

The Western European mounds seem to come from a different tradition than the ones in the Caucasus and the steppes, but the main idea to create a durable and well visible monument for an individual person or a group of people is similar, and their near synchronous emergence – given the dating insecurities typical for multi-period burial mounds – suggests the possibility that the two phenomena are connected. Both the long-barrow tradition and the round-barrow (kurgan) tradition spread into Europe from the west and east respectively and merged with the western European megalithic tradition during the 4<sup>th</sup> millennium BC (MIDGLEY 2008; SCARRE 2011). Since after 3000 BC the principle of round(ish) burial mounds prevails, such as those connected to the SGBR phenomenon.

Specialised weapons do appear in the archaeological record prior to the 3<sup>rd</sup> millennium BC. The function of clay balls in Neolithic settlements of the Middle East, often referred to as sling-missiles, is unclear, but were most probably used as hunting equipment (HOREJS 2015; BENNISON-CHAPMAN n.d.). Maceheads might constitute the earliest specialised weapon type known so far (CHAPMAN 1999; HAMBLIN 2006), but they could also have been used in other contexts, for example hunting or fishing. In Europe, the earliest finds show a coast-bound distribution in late hunter-gatherer-contexts (BIERMANN 2015). Still, a copper macehead is known already from the 6<sup>th</sup> millennium BC in Can Hasan, Anatolia (YALÇIN 1996), and HAMBLIN (2006) makes the point that tools made out of metal are less likely to have served as hunting or fishing equipment.

Elaborate shaft-hole axes are much less likely to have been used for other activities than interpersonal combat. The same is probably true for daggers, especially when they are shafted as halberds. CHAPMAN (1999) coins the term tool-weapons (for all kinds of tools that can also be used as weapons) and weapon-tools (more likely to have been produced as weapons).

In Europe, shafted axes are known since the earliest Neolithic, while more elaborated, shaft-hole ‘battle-axes’ start becoming more frequent during the 5<sup>th</sup> millennium BC. Their primary role as weapons is especially likely when they show elaborate shapes or are even produced from copper, which would not make them very effective woodworking tools. A first peak of proliferation of these is found during the south-eastern European Copper Age (Karanovo VI, Varna, Tiszapolgár and connected units), around 4600 to 4200 BC (HANSEN *et al.* 2015).

Their frequency in the archaeological record ceases after that, and only at the turn of the 4<sup>th</sup> to the 3<sup>rd</sup> millennium BC they become more numerous again, culminating in the Corded Ware phenomenon (VANDKILDE 2006). Since around 3500 BC, daggers and halberds become more frequent, for example in connection to Remedello in Italy (HORN 2014). After 2500 BC, the battle-axe is gradually replaced by daggers and halberds in connection to SGBR graves, i.e. Bell Beaker and Early Bronze Age burials. The sword – probably developing out of the dagger due to the new possibilities of Bronze – is known since the mid-4<sup>th</sup> millennium BC in the Middle East, e.g. Arslantepe (FRANGIPANE 2010), but does not become a more frequent weapon in Europe before around the mid-2<sup>nd</sup> millennium BC (TYLECOTE 1987).

It may be important to emphasise that the point made here is not that violence did not exist during early prehistory. There is evidence clearly disproving such a view (THORPE 2003; WAHL – TRAUTMANN 2012; TESCHLER-NICOLA 2012; MÜLLER-NEUHOF 2014). Yet the view of an endemically violent

prehistory, propagated by KEELEY (1996), and popularised by PINKER (2011) has been convincingly refuted by FERGUSON (2013a; 2013b). Interpersonal violence is episodic in most of prehistory, and one could discuss an increase in signs of violence during the Neolithic period (KELLY 2000). Still, there is a clear watershed in the role violence plays in social interaction and in the archaeological record within the 4<sup>th</sup> millennium BC. As made clear by Roberto RISCH (2015), despite the rich tradition of iconographic art during the Palaeolithic, Mesolithic and Neolithic periods, with all its hunting-scenes, inter-personal violence was never deemed worthy of representation. It is only since the 4<sup>th</sup> millennium BC that such representations start to appear, and they are strongly linked to state formation processes (RISCH 2015). The point made here is not to deny the existence of violence in the Neolithic, but an observation concerning the role of violence in social relations, and the proposition that that role is significantly altered when specialised weapons and specialised warriors become a factor, which happens relatively late in prehistory (SCHULTING 2013). Also, those phenomena are first archaeologically encountered around 4500 BC, in a few regions of Southeastern Europe and probably at a level so low that it did not effectively change social relations. It is only in the late 4<sup>th</sup> millennium BC and especially after 3000 BC that specialised weapons and warriors start to be regularly tangible in the archaeological record, most clearly in burials, but also in iconographic representations (RISCH 2015).

Concerning the timeline, we can conclude that in the region of western Eurasia we are dealing with, roughly, three different periods in relation to social inequality and organised violence. During the Mesolithic and Neolithic period, before around 4500 BC, signs of social inequality (e.g. JEUNESSE 1997) are subtle and overall scarce. Specialised weapons are extremely seldom (CHAPMAN 1999). Violence does occasionally erupt, might even be periodically endemic (WAHL – TRAUTMANN 2012; TESCHLER-NICOLA 2012; MEYER *et al.* 2015), but is no decisive factor in social organisation.

From 4500 BC to 2900 BC evidence for social inequality or stratification, as well as specialised weapons and trained warriors as a sign for a more prominent role of organised violence are more frequent, although their appearance in the archaeological record remains patchy and episodic (CHAPMAN 1999; HANSEN *et al.* 2015). Interestingly, the outstandingly large Trypillia megasites of the early 4<sup>th</sup> millennium BC in Ukraine and Moldavia (MÜLLER *et al.* 2016; CHAPMAN – GAYDARSKA 2017; HOFMANN *et al.* 2019), which every functionalist-evolutionary model would have expected to show marked social stratification, lack any signs of the kind, and also weapons are not prominent in their archaeological record.

In the Middle East, the period between 4500 and 2900 BC is the one in which both social stratification and more systematic forms of violence seem to constantly increase in the context of urbanisation, culminating in early states (TRIGGER 2003; HAMBLIN 2006). Already towards the end of this period, large-scale archaeological phenomena, like Boleráz-Cernavodă III in Central and Eastern Europe (ROMAN – DIAMANDI 2001; FURHOLT 2008), Kura-Arax-Khirbet-Kerak south of the Caucasus and the Levante (CHATAIGNER – PALUMBI 2014), or Globular Amphorae (SZMYT 1999), the spread of technological innovations like the animal traction complex, cattle burials etc. (SHERRATT 1981; JOHANNSEN – LAURSEN 2010) indicate a starting uptick of inter-regional mobility.

After 2900 BC early states are established in the Middle East, coinciding with a severe uptick in mobility and migration phenomena in Europe. Different variants of individual aggrandisement and gender inequality are proliferated throughout the entire region. Also, the specialised warrior now appears regularly as a male-associated social role.



### Linking state formation and mobility

The social, economic and political changes taking place in the Middle East and in Europe during the 4<sup>th</sup> and 3<sup>rd</sup> millennium BC are far reaching, leading to a fundamental transformation of social structure, modes of social interaction, and value systems. This is obviously most visible in the Urban centres themselves. But also, the impact on neighbouring communities must have been severe. First of all, the new militarism and imperialism (ALGAZE 1993) of the urban centres probably showed itself in the form of conquest, plunder and subjugation of neighbouring communities. The enhanced demand for resources – metals, animal products, wood, etc. – will have had different kinds of effects on communities near and far (ALGAZE 1993; ANTHONY 2007; KOHL 2007; STEIN *et al.* 1996). This is most probably also the case for the people living in the Caucasus area, north of which the new steppe pastoralist lifestyle emerged during the late 4<sup>th</sup> millennium BC (FRACHETTI 2012; KOHL 2007). We do not have to revert to old tropes, like the “dependency theory”, which see the development of pastoralism as a peripheral result of central urbanisation (BARFIELD 1989). Still, it is important to assess the effect the urbanisation processes in Mesopotamia and elsewhere might have had on neighbouring societies, such as the Caucasus and the Southeastern European steppes (KOHL 2007). Looking for direct, archaeological links in the form of objects exchanged between the steppe region and Mesopotamia, there is not much more than glass pearls presumably of Middle Eastern origin on the cemetery of Usatovo (ANTHONY 2007, 354f.). Indirect links are more convincing. The Kura-Arax complex links northern Mesopotamia and the Caucasus region, while the Maykop complex and kurgan burials provide a connection between the regions south and north of the Caucasus (see *Fig. 3*; IVANOVA 2013; KOHL 2007). Then of course, the 4<sup>th</sup> millennium BC, especially its second half, is a period during which several important technological innovations spread rapidly throughout western Eurasia – including metallurgic procedures (arsenic bronze, silver), the plough, wheel and wagon, and animal traction (SHERRATT 1981), maybe even horse domestication, many of which are often connected to an axis across the Caucasus (BAKKER *et al.* 1999; HANSEN 2021; MARAN 2004; ANTHONY 2007, and see <https://atlas-innovtions.de/en/>).

It is also the period, as discussed earlier, which sees the proliferation of specialised weapons all over Europe, while Mesopotamia and Egypt passed the “military threshold” allowing for the first time for large-scale violent coercion (HAMBLIN 2006). The presence and abundance of specialised weapons and fighters has important implications for how we have to think about power and politics. There is an overall tendency, not only in archaeology to conflate power and domination (FURHOLT 2021). Most prominently, Max Weber stands for a concept of power, which is individualistic, confrontative and coercive, and which is encapsulated in the German term “Herrschaft” (WEBER 1922). Herrschaft is modelled from the experience of modern state-backed power, and oriented towards the notion of command and obedience (ARENDT 1970; HAUDE – WAGNER 2019). Such a concept of power is not helpful in the task of understanding politics and social organisation in prehistoric contexts, where such a kind of “Herrschaft” is probably non-existent, or at least not as dominant as in our modern world. More helpful here is ARENDT (1970), who by contrast emphasises the collective and consensus-based nature of power. Arendt makes the useful differentiation between power and violence, which are seen by her as opposite, yet complementary phenomena. Power, in Arendt’s view the fundamental possibility to collectively act, is a crucial premise for any society, but is diminished through violence. Put simply, and perhaps a little simplifying, the more power exists, the less violence is occurring, the more violence is perpetrated, the less power can be maintained. ‘Power’ in Arendt’s sense is a social force reliant on collaboration, internalised social norms and is reinforced through social negotiation (AMBORN 2019). Weber’s ‘Herrschaft’, or ‘domination’ would describe a situation where violent coercion is more important, or prevalent, relative to collective power, which is nevertheless a necessary condition even



for the most despotic form of domination. To establish domination, someone, or a group of people, need the possibility not only to muster violence on a larger scale, but especially to create an imbalance of the means of violent coercion.

Besides the significance of the fact that people design and produce instruments whose sole function is to harm and intimidate other people, there is also the practical difference in effectivity of specialised vs. unspecialised weapons. The invention of specialised weapons, and the training of a fighter creates the potential of an asymmetry in the possibility of violent coercion. The more effective the weapon, the higher the possibility of one person or group of persons to be able to subdue resistance. In a situation without specialised weapons, without specialised fighters, where every person can basically pick up an axe and use it for aggressive or defensive purposes, we can assume a relatively levelled playing field. The possibility to coerce someone else into submission is in such a situation much more dependent on the ability to organise with others – to have power in Arendt's sense. Any larger group of axe-swinging farmers will more or less have the advantage over any smaller group, because they can rely on a stronger base of power.

Thus, the Neolithic, as a period in which specialised weapons are seldom and not very effective – clayballs as slingshots, and maceheads are probably what could come the closest to such kinds of tool (CHAPMAN 1999), and warriors are virtually absent from the archaeological record, can be understood as a period in which the effect of power – the ability to mobilise others for a collective goal – will heavily outperform the effects of violence. However, the more effective weapons become, and in addition, the more skilled the wielders of weapons, the more violence will be potentially able to overwhelm power. This might be less marked when it comes to the stone battle-axes of the early phase, but surely much more of a decisive factor, when swords, helmets and armours come into play in the Bronze Age.

### **Triggering 3<sup>rd</sup> millennium BC mobility**

The new phenomenon of domination, violent coercion and imperialism emerging during the 4<sup>th</sup> millennium BC in the Middle East must have been a traumatic experience for groups that were first victimised. These were societies, in which conflicts will have been dealt with mostly in the forms of negotiations between people maintaining some forms of social relations. Power and violence were to a higher degree socially embedded (CLASTRES 1994; KELLY 2000; SCHULTING 2013). During the Palaeolithic, Mesolithic and the Neolithic, in order to come to a decision or a resolution of a conflict people were largely dependent on collective power – that is relying on shared norms, and convincing others to do or go along with something through argument, persuasion or bribe, while the threat or use of violence was rather easily obstructed by mobilisation of a group of opponents. Another very effective option to resolve a conflict would be to leave the community (FURHOLT *et al.* 2019), the exodus. Violent conflicts in the form of inner-group or inter-group fighting, which could reach the most brutal outcomes thinkable, like the early Neolithic massacres of Talheim, Schletz, and others (MEYER *et al.* 2015), are clearly not the usual way of dealing with each other (FERGUSON 2013a; 2013b) during most of prehistory. In any case, even this kind of violent conflicts known from the Neolithic period is of a very different quality than the military operations we can assume having taken place since the 4<sup>th</sup> millennium BC. In the latter period we are talking about a clearly asymmetric form of violence, and in addition about a socially unembedded one – that is anonymous, unpredictable, merciless violence at an unseen scale, the humiliating experience of powerlessness in the face of overwhelming force and cruelty, the experience of being enslaved or seeing one's family members being enslaved, with very little possibilities to resist or counter-act. We can describe this as the emergence of a complex of violence and social stratification

– including gender inequality –, two phenomena that go hand in hand and are necessarily connected. Violence can only trump power in a situation in which there is a decidedly uneven playing field when it comes to the possibility to mobilise resources, and coercive violence. The establishment of social stratification needs to be backed by domination. Empirically, we see this violence-stratification complex emerging in the archaeological record of the 4<sup>th</sup> millennium BC in western Eurasia, with its culmination in the Middle East.

This would have sent shock-waves into communities with direct contact to the new urban centres. An obvious reaction in the face of the imminent threat of death or enslavement would be emigration. The exodus from early state centres towards the pastoralist peripheries is a motive that is prominently featuring in the biblical record (DIÁKONOV 1982). While these sources date to a later historical period, it is conceivable that similar phenomena might have occurred as soon as urbanisation and militarisation started to emerge. A series of movements of people away from the regions surrounding Mesopotamia will have affected people living further away, producing a kind of a chain-reaction. Add to this a number of new pull-factors, such as the high demand for resources the urban centres (ANTHONY 2007; KOHL 2007) will have created, and a significance uptick in human mobility both locally and regionally will likely have been the result. A combination of push and pull factors will have stirred up local communities and regional interaction patterns, facilitating the spread of social and technological innovations. A certain amount of mobility will, as argued in the introduction, always have been the default mode of Neolithic and Copper Age communities in western Eurasia, which is for example reflected in the constant mixing of genetic lineages, which aDNA analyses increasingly reveal. Large overturns of genetic profiles are detected when the spatial reach of human movement starts to transcend geographical and ecological niches (FURHOLT 2021). A good example of this is precisely the 3<sup>rd</sup> millennium BC in Europe. What is in the archaeogenetic literature commonly referred to as “Early European Farmers” or “Early Anatolian Farmers” (here: EAF), or “Steppe Ancestry” (here SA), are outcomes of long-term admixture processes within established regions of interaction – Western and Central Europe after 6500 BC saw for more than 3000 years a steady admixture of the migrants from Anatolia and European hunter-gatherers (MATHIESON *et al.* 2018; OLALDE *et al.* 2019). In the Eastern European steppe regions, “Eastern European Hunter-gatherer” (EHG), “Iranian-Caucasian populations” (CHG) and Anatolian Neolithic (EAF) lineages (WANG *et al.* 2019) mixed and re-mixed during the 4<sup>th</sup> millennium BC, forming what is then called steppe ancestry “SA”. During the late 4<sup>th</sup> millennium BC, mobile, pastoralist lifestyles were developed in these regions north of the Caucasus (ANTHONY 2007; KOHL 2007; FRACHETTI 2012). After 3000 BC the reach of movement is drastically increased and the boundary of movements loosened, transcending the steppe-like environments, into the West and Northwest reaching Central and later Western Europe, and towards the East, reaching the Altai mountains (NARASIMHAN *et al.* 2019). The direction of this expansion is decidedly away from the Caucasus and Middle Eastern regions with the newly developed urban centres and socially stratified societies. It is conceivable that these movements are first- or second-order consequences of the shock-wave being emitted from processes involving the development of the violence-stratification complex culminating in early state formation.

It is also conceivable that these communities of the periphery, shaken up by push- and pull-factors would incorporate several of the new social institutions created in this process. For example, communities traumatised by violence and enslavement might have developed an ideological preference for skills in armed combat and thus started to value the specialised warrior. They might have accepted the social aggrandisement of skilled and effective warriors. They might have, as LERNER (1987) argues, been infected with the new fixed and unequal gender roles, be it in the guise of protective measures for women. These new social features will probably have been transformed in different ways by different

communities, but they constitute powerful memes which seem to stick with communities for the centuries, even millennia to come.

### Who is buried in the Corded Ware burials?

Once again, the argument made so far should not be mistaken for an 'ex oriente' approach, where historical changes in Europe are seen as mere reflections of events in the Middle East. By contrast, the severe changes in social organisation displayed in the burial rituals in Central and Northern Europe since after 2900 BC, and in parts of Western Europe since after 2500 BC are part of a large-scale social transformation which saw the largely synchronous and interconnected rise of violent coercion becoming a more important factor in social interaction, affecting social relations, the role of the individual and gender. Still, this transformation, although on its way for many centuries, culminated in the urbanisation and state formation processes in Mesopotamia and Egypt, which constitutes a watershed in the socio-politic and economic history of Western Eurasia. Yet, other regions also contributed significantly to this process, for example Southeastern Europe, where copper and gold metallurgy as well as battle axes and gender differentiated burials seem to have appeared prior to comparable phenomena in the Middle East (BORIC 2009; KRAUSS *et al.* 2017); or the Caucasus region, where early rich kurgan burials and metallurgy appear so early that they are clearly more than a passive recipient of middle eastern ideas (HANSEN 2017).

Nevertheless, the passing of the military threshold during the late Uruk period in Mesopotamia that brought with it the emergence of imperialism and an uptick in exploitation of natural resources from near and far is probably some kind of tipping point stirring up mobility at an unprecedented scale. These people moving and intermixing had been to different degrees confronted with the new realities of war, slavery and gender inequality, which had been most devastatingly implemented and enforced within the reach of the new urban centres. Those migrants' new experiences resulted in partial transformations of social relations and underlying ideological values. Yet, they are only archaeologically visible in those regions, in which they were incorporated into the burial rituals, especially in kurgan graves, SGBR burials, or in iconography (RISCH 2015; HANSEN 2017). Individual aggrandisement, male warriorhood and fixed gender roles formed a complex of interrelated features of social organisation. Yet history is more complex than this, as can be shown in the archaeological record. There is, for example, an important temporal trend throughout the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC. The monumental display of individual power, wealth and social status that is seen in many Maykop burials (HANSEN 2017) is a phenomenon that gets less and less pronounced over time. Instead of large, monumental burial mounds, what we see is a development towards a pattern highlighting many, small burial mounds, often found in clusters, or stretched out in rows over the landscapes. While there are some large Yamnaya kurgans, most are rather small and modest (MERPERT 1974; FRÎNCULEASA – PREDA – HEYD 2015; KAISER 2019). In Corded Ware contexts small burial mounds are the rule (STRAHM 1971; HEIN 1987; HEYD 2000; HÜBNER 2005; BOURGEOIS 2013; KOLÁŘ 2018). Many authors have tried to find signs of social inequality, such as differences in the amount or value of Corded Ware grave goods, but such are basically not existing (WIERMANN 2002; DORNHEIM – METZLER – LISSNER 2005; HÜBNER 2005). Burial good assemblages consist of weapons, tools, jewellery or pottery that almost never exceed what could be called a personal equipment: One axe, three arrowheads and a blade, or two pots and a necklace, these are typical burial goods. Status symbols, such as kurgans, weapons or jewelry are decidedly proliferated and decentralised. One could argue that the feature of individual aggrandisement of the few is transformed into access, albeit more modest, for the many. To take a symbol, or instrument of elite distinction and make it available to larger amounts of

people has been described as an effective bottom-up strategy to undermine emergent social stratification (ANGELBECK – GRIER 2012). Obviously, we do not know if the patterns observed are the outcome of a conscious, intended process, or merely an unintended consequence of an increasing number of people striving to become part of the elite group. The effects of both would probably have been quite similar.

A second, maybe even more elegant phenomenon of counter-power, of resistance was recently discovered by Carsten WENTINK (2020). Looking at use-wear of Dutch Corded Ware ‘battle-axes’ he found that they were not primarily used as tools for inter-personal violence, but they were used to uproot trees, one of the most important, but also utterly ‘profane’ agricultural activities after the introduction of the plough. Again, conscious or not, to de-contextualise this status symbol, this symbol of violence and coercion, which will eventually still end up in a ‘warrior grave’, in such a manner heavily evokes SCOTT’s (1987) “weapons of the weak”, mostly hidden strategies of every-day resistance and evasion of domination. In other words, although during the 4<sup>th</sup> millennium BC social stratification and individual aggrandisement backed by violence saw massive breakthroughs, people did not stop resisting these phenomena, through mobility and migration, but also through active de-centralisation and proliferation as well as de-contextualisation of the new status symbols.

## Conclusion

In this paper I explored the social background and possible triggers for the severe uptick in mobility in Western Eurasia detected from about 3000 BC by recent aDNA research, often referred to as ‘steppe migration’. I argued that a marked complex of related social transformations took place largely during the 4<sup>th</sup> millennium BC in the whole region, culminating in urbanisation and state formation processes in the Mesopotamia and Egypt. This posed such disruption to social relations overall, that would have served as the ultimate fuel added to an already smouldering rise in social mobility. The archaeological record clearly betrays the main reason for this fundamental switch in social relations: The emergence of a system building upon the connection between domination (i.e. coercive violence), social stratification and the definition of strict and unequal gender roles, which had severe effects on social reality. Even though communities and individuals resisted, evaded or fled the consequences this new system, once the violence-stratification complex was in the world, it showed up as one of their main ideological value sets expressed in burials or iconographic representations. Until this day, it haunts us and drives the histories in human communities, despite the fact that all major religions are explicitly geared to oppose it and promote its antidotes, such as pacifism, solidarity and fundamental human equality. If we want to have a chance of one day escaping this vicious cycle of violence and inequality it is crucial that we stop naturalising it and acknowledge its historical nature, for which the 4<sup>th</sup> to 3<sup>rd</sup> millennia BC in Western Eurasia hold important clues.

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# Population dynamics in the third millennium BC – The interpretation of archaeological and palaeogenetic information

ELKE KAISER

## Abstract

*The paper discusses the palaeogenetic data suggesting migrations from the steppe area to Central and the south of Northern Europe around 3000 BC in the context of the available archaeological information. Based on two case studies, two different situations of contact between the Yamnaya Culture and neighbouring cultural groups are presented. Comparing these, one can develop differing scenarios that argue against an all-encompassing narrative of a single large-scale migration. This article is intended to contribute towards the use of archaeological evidence in a nuanced manner for the interpretation of the aDNA data of relevance here, which are serving as proxies for migrations. The fragmentary data that are available for the two case studies – both restricted to the funeral sphere – suggest that complex processes were unfolding in the two regions before, during and after the turn of the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC.*

**Key words:** Yamnaya Culture, migrations, archaeogenomic evidence

## Introduction

Since 2015, palaeogenetic data have been causing something of a furore among archaeologists working on the 3<sup>rd</sup> millennium BC. These data showed genetic components in the ancient DNA of individuals buried in graves of the Corded Ware Culture in Central Europe and in adjacent regions that had not been found in earlier inhabitants of this area. The data came from two different studies of ancient DNA samples carried out at two different palaeogenetic laboratories. The only population group in which comparable genetic compositions were detected was one that inhabited the Eastern European steppe. The studies by the two aDNA research groups confirmed one another's findings in this respect as well. The individuals from the Eastern European steppe who were sampled are attributed to the Yamnaya Culture, so the appearance of the new genetic composition in bodies deposited in graves of the Corded Ware Culture was interpreted as evidence of migration from the steppe into Central Europe in the early 3<sup>rd</sup> millennium BC.

These palaeogenetic findings were met with scepticism by some archaeologists, while others took them up with great enthusiasm. Suddenly, ideas about migrations of Indo-Europeans, the spread of the proto-Indo-European language and its origins in the Eastern European steppe that had long been regarded as obsolete, gained renewed currency in scholarly circles. Since 2015, other population genetic studies have, by and large, confirmed the findings of the already mentioned first studies, and contributed a great deal of additional information about changes that occurred in the 3<sup>rd</sup> millennium BC (*Fig. 1*). Of foremost importance for our purposes here, though, is the knowledge that the existence of contacts between people in the Eastern European steppe and both Central Europe and Scandinavia has now been clearly established by means of ancient DNA. Statistical analysis of the enormous sets of genetic data led the palaeogenetic researchers to



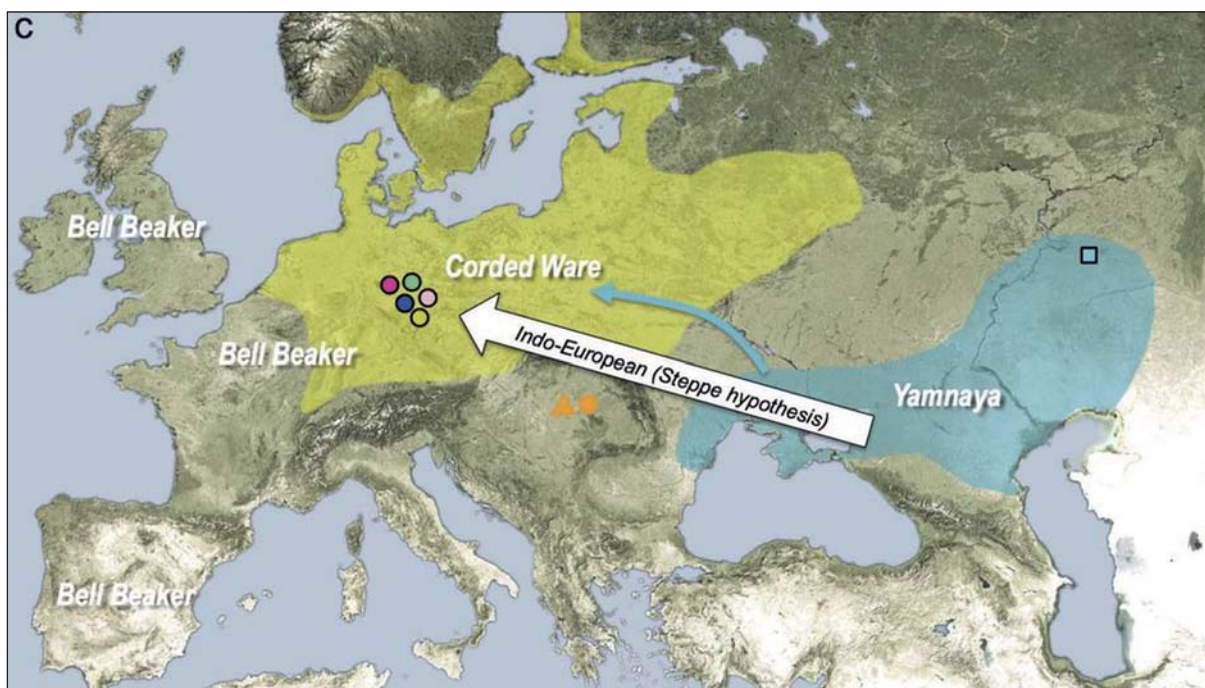


Fig. 1. Simplified representation of population dynamics indicated by the aDNA results  
(after HAAK et al. 2015, Extended Data Figure 5)

conclude that the change in the gene pool in Central Europe and adjacent areas was so great that it could only be explained by a migration of steppe inhabitants, a migration that has been described as “massive”.

This conclusion stands in stark contrast to the results of archaeological research. Archaeologists have identified only a scattering of find complexes in Central Europe and the southern part of Northern Europe that they believe might point to interactions between inhabitants of those regions and people from the steppe in the early 3<sup>rd</sup> millennium BC, and even fewer that they consider as providing unambiguous evidence thereof. Topping this short list is certainly the grave at Bleckendorf (Neu-Egeln) in Saxony-Anhalt (BEHRENS 1952), as it contained a hammer-headed pin made of bone and a small dagger, along with a beaker of the Corded Ware Culture. The best parallels for both the pin and dagger are found in the Yamnaya Culture north of the Black Sea.

In all other cases where Central European finds have given rise to speculation about a possible origin in the Eastern European steppe, this has been the subject of considerable debate, and the total number of these cases is quite small (for an overview, see KAISER 2019, 257–277). Thus, archaeologists found themselves confronted with a distinct dilemma upon the publication of these palaeogenetic data. They constitute genomic information indicative of East-West migration / movements in the 3<sup>rd</sup> millennium BC. If the migrations and the numbers of people involved in them were genuinely as significant as has been assumed on the basis of the sampled individuals from Central Europe, then one would, of course, expect to find archaeological traces of these dynamics. This is the reason why the interpretations that accompanied the ancient DNA findings were assessed with such scepticism (HEYD 2017; KAISER 2016; FURHOLT 2018). Reservations relating to their underlying conceptions were also voiced out: were old ideas about militarily superior pastoralists in the steppe, long regarded by many archaeologists as obsolete, emerging once again? Yet other researchers welcomed the new data, viewing it as relieving archaeology of the onerous task of tracing migrations and thus freeing it to develop in new directions. Perhaps K. Kristiansen expressed this view most aptly: “It [prehistoric genomic evidence]

will allow the reconstruction of migrations and other ways of renewing the gene pool, which apparently took place several times during prehistory, but especially during the later Neolithic/early Bronze Age in western Eurasia. And when compared with relevant archaeological data and cultures it will allow critical analysis of how the two interact” (KRISTIANSEN 2014, 22; insertion in brackets by E. K.).

My own scepticism regarding the disconnect that has opened up between archaeological and palaeogenetic information has not been tempered by the appearance of additional aDNA studies. I am therefore taking this opportunity to present two different situations of contacts between the Yamnaya Culture and neighbouring cultural groups, in the form of two case studies. By comparing them, one can develop differing scenarios that argue against an all-encompassing narrative of a single large-scale migration. This article is intended to contribute towards the use of archaeological sources in a nuanced manner for the interpretation of the aDNA data of relevance here, which are serving as proxies for migrations. In this context, it is also important to briefly describe the Yamnaya Culture and its heterogeneity, as it would be a mistake to understand it as a monolithic block. Accordingly, this paper, after briefly outlining the palaeogenetic studies on the relevant population dynamics mentioned above, describes the Yamnaya Culture. It then turns to review, taking a historiographic perspective, the models of migration that have been put forth for the time before the existence of written records. Finally, it presents the two case studies I mentioned, one relating to the Western Pontic region, and the other to Podolia and Małopolska.

### **Population dynamics in the 3<sup>rd</sup> millennium BC from the palaeogenetic perspective**

The first of the two 2015 studies to appear was that of W. HAAK and his colleagues (2015), who investigated data derived from genome-wide sequencing of samples from 69 skeletons unearthed at sites throughout Europe, as well as other data available in the literature. The burials involved dated from different periods, but many of them were concentrated within the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC. This pilot study detected a marked shift in the genetic makeup of the sampled individuals, who were buried in graves of the Corded Ware Culture and the Single Grave Culture, i.e. in Central Europe and southern Scandinavia, around 2900 BC: new genome components appeared in several of them. These components had been found only very rarely in individuals buried in Central or Northern Europe in earlier periods. They were found, however, in the samples from Eastern Europe, specifically in the relevant individuals buried in graves attributed to the Yamnaya Culture. The team of authors, including the palaeogeneticist W. Haak, assumed that a “massive migration from the steppe” was the cause of this change. Moreover, the authors suggest that in addition to bringing different genes with them when they migrated westwards, these steppe inhabitants may also have brought the Proto-Indo-European language. With that, in the view of many archaeologists, new life was breathed into a discourse they had long regarded as obsolete.

The second paper, published shortly thereafter by M. Allentoft and his team from the Centre for GeoGenetics at the University of Copenhagen (ALLENTOFT *et al.* 2015), offered confirmation for this. Allentoft’s group had analysed 101 individuals from an area stretching from the Alps to the Altai Mountains, focusing on the entire Bronze Age. The results from their statistical analysis of these genome-wide data presented a similar picture: a new gene type, previously unknown over much of Europe outside of the steppe zone, first appears in burials of the Corded Ware Culture.

In the intervening period, many more studies investigating further aDNA material from various parts of Eurasia have been published. As of March 2018, more than 1,300 genome sequences had been obtained from human remains recovered from archaeological contexts worldwide (CALLAWAY 2018), and the number has increased further ever since. Some of these also include new analyses of skeletons buried in Yamnaya graves.

Thus, a representative palaeogenetic picture of the Yamnaya Culture is gradually taking shape. A certain amount of criticism of the first two studies was justified, as each of them analysed only skeletons from a single micro-region of the Yamnaya Culture: HAAK *et al.* (2015, Suppl. material, Table 2) investigated nine individuals from the Middle Volga region. ALLENTOFT *et al.* (2015 Suppl. Table 1) had six samples from burial mounds in the Northwest Caspian region (Kalmykia). Four individuals linked with the Yamnaya Culture in Northern Caucasus were sampled for a paper that appeared in 2019 (WANG *et al.* 2019, Suppl. data, file 1). Thus far, genome-wide sequencing has been done for only a few of the individuals interred in the many Yamnaya burials found north of the Black Sea and in the exclaves in the Balkans (cf. MATHIESON *et al.* 2018, Extended Data Figure 2 with two samples from Ukraine and one from Bulgaria). As my intent here is not to review the type and extent of genetic data available for the Yamnaya Culture, I will simply note that the number of samples sequenced is still not that large, and that the burials they came from are very unevenly distributed over the huge geographical area across which this culture is disseminated. Nonetheless, conclusions are being drawn about migrations of people of this culture based on this spotty selection of palaeogenetic samples. This happens despite the fact that from an archaeological perspective the culture itself, in no way represents a monolithic block, but is, on the contrary, made up of numerous regionally (and probably also chronologically) distinct groups.

Yamnaya Culture or Yamnaya culture-historical community

Descriptions of the Yamnaya Culture are based on tens of thousands of graves found in burial mounds in the steppe / forest steppe that are spread over an area stretching from the Lower Danube and the eastern edge of the Carpathians in the west to the Ural river in the east (Fig. 2). The most recent work investigating Yamnaya graves across this entire area was written in 1968. This work, a monograph



Fig. 2. Scheme of the regional Yamnaya Culture groups in Eastern Europe according to N. Y. Merpert (1974) (after KAISER 2019, Fig. 4)



by Nikolai Ya. MERPERT (1968), was never published in its entirety. The part of it that was published (MERPERT 1974) in the form of a stand-alone publication consisting of the final chapters, is devoted to the eastern regional variant found between the Ural and the Volga. In this publication, Merpert puts forth his system of regional divisions of what he calls the “Yamnaya culture-historical community”. Merpert’s system was largely accepted by East European archaeologists and subsequently elaborated through the subdivision of his divisions into even smaller regional variants (RASSAMAKIN – NIKOLOVA 2008, 53 Fig. 1).

What Merpert was describing with his concept of a “culture-historical community” corresponds, in its essentials, to the “cultural complex”, a concept developed to describe sites exhibiting similar material culture that were spread over a very large area, such as the Corded Ware Culture or the Bell Beaker Culture.

The characteristics typical of Yamnaya graves are an oval or rectangular pit within a burial mound and a standard burial custom (Fig. 3): the body is laid on its side or back in a

crouched position and grave goods and/or bones are often stained with ochre, in the case of grave goods the staining can cover the entire surface or only certain parts of it. Regional groups can vary in many respects, such as grave construction, the presence of fixtures such as posts in the grave, the placement of a pad of organic material on the grave floor. Notwithstanding the standardisation mentioned above, regional variants can also differ with respect to the burial itself. The angles of the crouched position can vary, as can the orientation of the body, etc. In many regions, grave goods were found only in one grave out of five, whereas every third grave in Kalmykia contained grave goods (SHISHLINA 2008, 60–82). Ceramic vessels account for the greatest percentage of grave goods; these vary in form and decoration across the individual regional groups. Fig. 3 shows a typical Yamnaya Culture grave documented at a site by the Dnieper, close to the city of Nikopol in present-day Ukraine. The grave inventory included a hammer-headed pin made of bone; this type of pin is typical of elements of ornamentation found in graves between the Southern Bug and the Dnieper, as well as those in Kalmykia.

Only a few isolated settlements attributed to the Yamnaya Culture have been found; these lie in the river valleys of certain regions, including the valley of the Dnieper (KAISER 2019, 101 Abb. 61). Thus, our possibilities in attempting to reconstruct the way of life of these steppe inhabitants are very limited; it is primarily from the funeral sphere that most of what we know of them derives. It has been possible to glean some information from other source for certain regions though archaeozoological analyses of faunal bones from the settlements in the Dnieper basin indicate that cattle was the primary livestock kept there, while sheep and goat breeding played a complementary role (KAISER 2019, 150–157; Abb. 96). Hunting did constitute a complementary food source, and pig and horse bones were represented in small percentages as well. The small number of settlements and, above all, the lack of systematic

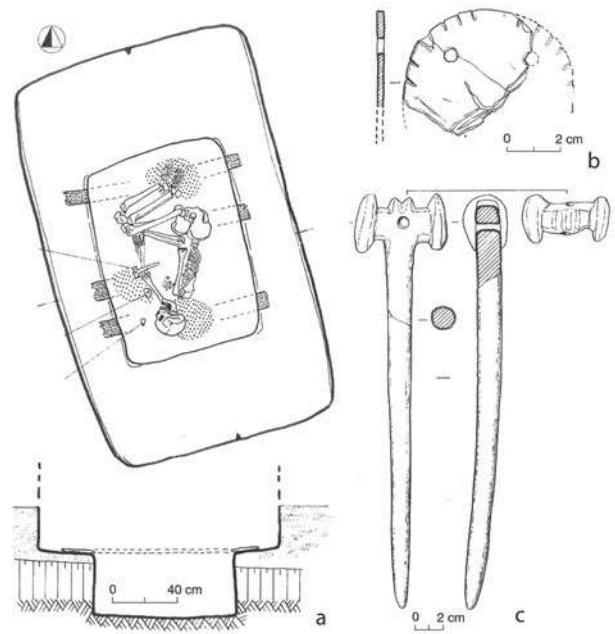


Fig. 3. Grave with the features typical for construction and burial of the Yamnaya Culture north of the Black Sea. Zavadskie Mogily (Ukraine) kurgan 7; a grave covered with timber; b metal disc; c hammer-head pin made of bone (after BUNJATJAN – KAISER – NIKOLOVA 2006, Abb. 66,1.2.4)

flotation during excavation work make it difficult to assess the significance of arable farming in this period. However, it seems unlikely that grain was cultivated, or if it was, then probably only on a very small scale (PASHKEVICH 2003). Thus, the people dwelling in the steppe and forest steppe to the north of the Black Sea were cattle breeders. The more arid conditions in the steppe zone of Kalmykia, further east, may have favoured a specialisation on raising sheep and goats as livestock there, but since no settlements have been found in this area, we can neither confirm nor refute this suggestion. We do have some insight into the seasonal cycles in the pastoralist economy there, thanks to N. SHISHLINA and colleagues (2012; 2017), who used results from isotope analyses for individuals from burials in Kalmykia to help reconstruct them. What forms of mobility can be associated with the Yamnaya Culture are yet to be conclusively established; moreover, they may well have varied from one region to the next (cf. e. g. GERLING 2015, 210–218).

Reconstructing the social structures of these pastoralist communities has proven no less problematic. The modest grave furnishings, the general standardisation in the funeral sphere, the very small number of skeletons on which anthropological evaluations have been performed: all of this makes the socio-archaeological study of these groups difficult. Nevertheless, some such studies have been undertaken for groups associated with individual regions, such as that between the Dniester and the Prut (IVANOVA 2001), as well as for the entire Northern Black Sea region (RASSAMAKIN 1999, 151–154; KAISER 2011). Though different researchers have evaluated the information available differently, I still wish to quote Yuri Ya. RASSAMAKIN's (1999, 154) remarks with respect to grave goods here: "When considering the military potential of the steppe population during the Eneolithic and Early Bronze Age [Yamnaya Culture, E.K.], we should note the complete absence of any expression of the 'warlike spirit of the nomads' in the burial rite. The first weapon assemblages (bow, bundle of arrows, and battle axe, accompanied by wagon elements) appear only in the Middle Bronze Age [Catacomb Culture, E.K.]". Just as they yield no indication that some members of the communities were armed, the Yamnaya graves provide very few indicators for affiliation with groups of other types of status.

One type of information that is in (relatively) good supply for the Yamnaya Culture graves is radiocarbon dating. And yet, here again, researchers are confronted with numerous contradictions. Several factors contributed to this: inconsistencies associated with the dates themselves, questions concerning the archaeological assignment of the dated grave complex and what for many years was the standard practice of taking samples from only one or two of the graves in a burial mound. Despite the many radiocarbon dates, the Yamnaya Culture can only be assigned to the long period stretching from 3100 to 2450 cal BC and cannot be characterised further temporally within this interval. Thus, the "Yamnaya culture-historical community" is composed of diverse regional groups, spread over a very large territory, that exhibit comparable burial customs and grave constructions. The group found in the region between the Dniester and the Prut is the one that lies in the focus of the discussion of the two case studies of population movements to follow (*Fig. 2*).

### **Migration movements from the East European steppe**

As is well known, migrations from the Eastern European steppe and similarities in material culture, particularly with respect to burial customs, have given rise, in the past and more recently, to speculation that the Corded Ware Culture may be the result of migration movements from the steppe. I will not be detailing this here, but rather refer only to the concept of "kurgan cultures" put forth by Marija Gimbutas. Gimbutas subsumed the archaeological remains from the 5<sup>th</sup> to the 3<sup>rd</sup> millennium BC under this term. Burials in mounds (kurgans) was the identifying characteristic of the kurgan cultures, according to



Gimbutas; other aspects of material culture had changed over time. She identified four phases of the kurgan cultures based on these changes (GIMBUTAS 1979; 1994). The “bearers” of the “Kurgan cultures” were horse-riding pastoralists, who swept into Southeastern Europe in three “waves of invasion”, each of which had devastating consequences for the local populations of sedentary farmers. Gimbutas equated the third such wave with the Yamnaya Culture. Initially, her publications were met with approval and rejection in equal measure. However, in the 1970s, ‘80s and ‘90s, fuelled by various theoretical discourses in the United Kingdom, archaeologists grew increasingly sceptical about the notion that changes in material culture could be explained by migrations, some coming to reject it completely (CHAPMAN – HAMEROW 1997; PRIEN 2005, 29–38).

In 1990, D. W. Anthony challenged this trend. Drawing on insights from socio-anthropology and geography about contemporary and historically documented migrations, he put forth a theoretical model for the reconstruction of migration processes in prehistory. The Yamnaya Culture plays a key role in the case study he used to illustrate how the model could be applied. At the time, very little had been published in Western languages about the Yamnaya Culture. While the chronology upon which Anthony’s reconstruction rested was flawed, forcing him to revise his thinking on the Yamnaya Culture and its exclaves in Southeastern Europe, his paper resulted in a critical reassessment of the role of migrations and the methodological approaches to tracing them in prehistory (BURMEISTER 2000; PRIEN 2005).

In his 2007 book, Anthony no longer assumed that there had been one mass immigration from the steppe into the regions lying to the west of it (ANTHONY 2007, 349–367). He points out that pastoralists whose social structure differed from that of the sedentary farmers had moved into the Balkan region even before the Yamnaya arrived. These, predominantly male, immigrants established themselves as social leaders, or “chiefs”, in the new territories. As this process unfolded, Anthony suggests, Proto-Indo-European dialects, including one spoken by the pastoralists of the Yamnaya Culture in the Northern Black Sea region, continued to spread throughout the regions west of the steppe. The response that such assertions were met with in academic circles could hardly be termed enthusiastic (KAISER 2016), however, with the palaeogenetic information now becoming available, it appears that a new era has begun. Anthony is a co-author of the paper of W. HAAK *et al.* (2015) and, one can therefore assume, is convinced by the conclusions regarding a “massive migration” from the steppe that it contains.

Why then, have the population genetics studies evoked such great surprise and, again, scepticism among so many archaeological researchers who study the 3<sup>rd</sup> millennium BC in Europe? One of the main reasons is certainly the paucity of archaeological information pointing to significant immigration to the West from the steppe zone. The so-called ochre graves in the Balkans and in the Tisza region have figured frequently in discussions related to this topic in recent years. These grave complexes exhibit certain elements in their construction and burial rite that are directly comparable to the graves of the Yamnaya Culture, but controversy keeps erupting over whether even this is genuinely the result of immigration from the Eastern European steppe or whether another explanation might be possible.

Accordingly, I will now provide a brief description and evaluation of these Yamnaya Culture graves found in Southeastern Europe. I will then compare the situation there with the one in Podolia, by the upper course of the Dniester, where burial mounds containing graves of the Yamnaya Culture (Yampil district, Ukraine) have been excavated. In the latter case, recent research has made it possible to draw a clear dividing line between the burial mounds in Podolia and the complexes of the Corded Ware Culture in Małopolska. By presenting these two case studies, my aim is to draw attention to the variety of contact situations that are possible, and to offer a nuanced look at migration processes in this period from an archaeological perspective. This is my way of arguing against the far too broad-brush narratives in which palaeogenetic data are simply conflated with the attribution of an archaeological culture. The question

of how archaeological and palaeogenetic research can best inform one another, involving differing concepts and constructs from two different academic disciplines, provides more than sufficient meat for investigation by an ERC grant, within the framework of which Volker Heyd hosted the international workshop “Yamnaya interactions” at the University of Helsinki in 2019. For this reason, I have decided not to take up the construct of a third discipline, linguistics, which scholars are fond of discussing in this context: the Proto-Indo-European language.

### The first case study: the exclaves of Yamnaya Culture in the Balkans

Numerous burials that have been attributed to the Yamnaya Culture have been excavated in burial mounds outside the Eastern European steppe and forest steppe. These mounds are found along the Lower Danube, south of the Balkan range and east of the Tisza river. In 2011, having compiled numerous publications on burial mounds, V. HEYD (2011, 529–530; Fig. 1) counted the number of tumuli excavated in Southeastern Europe at around 450. That number is sure to be larger today, given the intensive research activity in many regions since then (e.g. AGRE 2015; FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA *et al.* 2017; 2019; DIACONESCU – TINCU 2016). I will now present the main findings

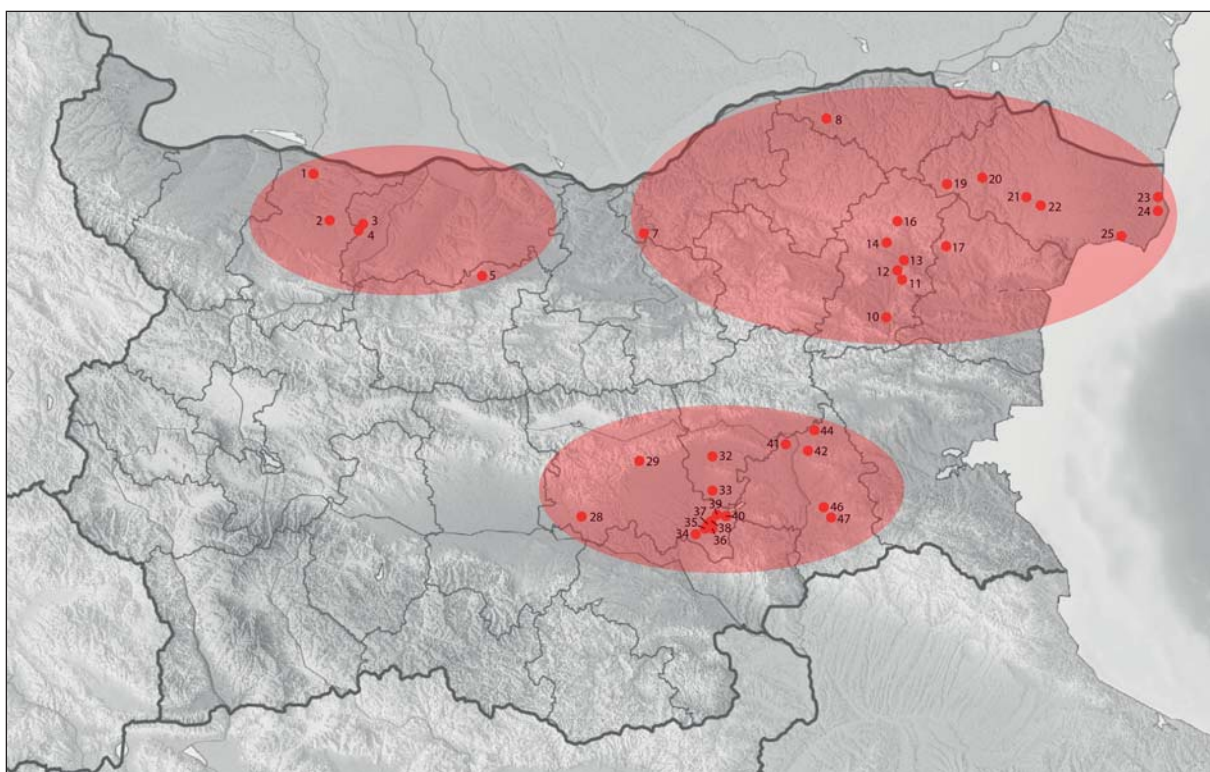


Fig. 4. Sites in Bulgaria where Yamnaya graves were excavated. 1. Khârlets, 2. Tärnava, 3. Knesha, 4. Tarnak, 5. Goran.Slatina, 6. Lovech, 7. Polsko Kosovo, 8. Belitsa, 9. Veselets, 10. Smyadovo, 11. Kiulevcha, 12. Madara, 13. Kalugeritsa, 14. Tsarev Brod, 15. Pliska (only recorded as a find spot, the material was not accessible), 16. Izbul, 17. Belogradets, 18. Devnya, 19. Zheglartsi-Orlyak, 20. Geschanovo, 21. Riltsi, 22. Plachidol, 23. Durankulak, 24. Shabla, 25. Kavarna, 26. Yunatsite, 27. Dolno Sakhrane, 28. Chirpan, 29. Stara Zagora, 30. Săbrano, 31. Benkovski, 32. Ezero, 33. Pet Mogili, 34. Mednikarovo, 35. Troyanovo, 36. Ovchartsı, 37. Malka Detelina, 38. Golyama Detelina, 39. Kovachevo, 40. Tărgovishte, 41. Drazhevo, 42. Mogila, 43. Irechekovo, 44. Zimnitsa, 45. Venets, 46. Boyanovo, 47. Popovo (after KAISER – WINGER 2015, Fig. 4)

from a project completed in 2012 (KAISER – WINGER 2015), involving the compilation and evaluation of published and unpublished data from graves of the Yamnaya Culture in present-day Bulgaria. We were able to identify three micro-regions in which burial mounds had been documented and excavated in this area (Fig. 4). Graves meeting the following criteria were attributed to the Yamnaya Culture: 1) burial mound (primary or secondary burial); 2) rectangular or oval shaped grave pit; 3) deceased buried in a crouched position (on the side or on the back). Some of these burials also displayed further features typical of the Yamnaya Culture, such as wooden beams covering the grave (less often stone blocks), staining of the grave floor and/or the bones with ochre, presence of an underlying mat and/or certain categories of grave goods.

To provide a better overview, two geographic regions were considered separately in the examination of the elements of the burial customs: Southern and Northern Bulgaria. While the percentages of graves in which mats had been laid down and in which ochre had been scattered were similar in the two groups, we did find differences with regard to grave goods. More than half of the burials located south of the Balkan range contained grave goods, primarily vessels (Fig. 5). In contrast, north of the Black Sea only one out of five graves held at least one object deposited with the deceased, often a vessel. In Southern Bulgaria it was common to find several vessels, usually local forms that can be directly compared to those found in relatively nearby tell settlements in Thracia (AGRE 2015, Fig. 7; FRÎNCULEASA – PREDA – HEYD 2015).

The metal spiral hair rings, usually found near the skull, in burials in both of these regions west of the Black Sea, provide some information about the possible origins of the communities who buried their dead in these graves exhibiting typical characteristics of the Yamnaya Culture. Ornaments like these are found relatively frequently deposited in Yamnaya Culture burials in the area between the Prut, the Dniester and the Lower Danube (KAISER 2019, 214–221). They are also found in graves associated with another regional group along the banks of the river Kuban, east of the Sea of Azov (GEI 2000, 159–162). It is rare to find them deposited in graves of the other regional variants of the culture.

This same project compiled the radiocarbon dates for the grave complexes in Bulgaria (KAISER – WINGER 2015, Fig. 12). These show that the complexes were created over a longer period of time, between 3100 and 2600 BC. Summarising, we interpreted the archaeological findings I just presented as indicating immigration from North Pontic steppe region. We believe that the population group involved was fairly small. We view the relatively low numbers of graves and burial mounds attributed to the Yamnaya Culture as arguing against mass immigration, even though we must assume that a large number of mounds have been destroyed or have not yet been excavated. However, this filtering of sources exists with respect to the East European steppe as well, and the number of Yamnaya Culture graves investigated over that large geographic range lies, nonetheless, in the five-figure range. At any rate, the changes in burial customs that I have described along with the presence of local vessels in the graves south of the Balkan range suggest a transformation of the burial customs and grave forms in the region after the immigrants arrived, which can probably be attributed to contact with local population groups.

In the years since that research was conducted, it has grown increasingly clearer that some of the burial mounds in question should not be associated with the advance of the Yamnaya

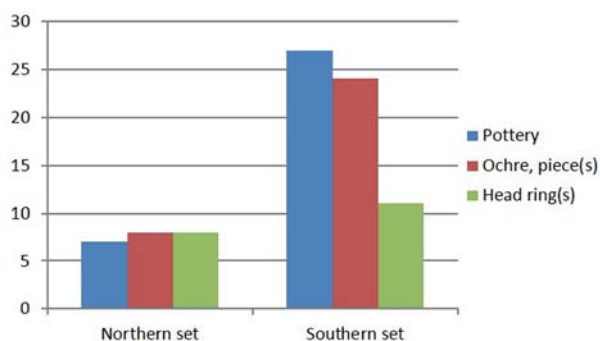


Fig. 5. Distribution of the three categories of grave goods most common in Yamnaya grave North and South of the Balkan range (after KAISER – WINGER 2015, Fig. 5)

Culture in this region, but are instead somewhat older, dating to the last century of the 4<sup>th</sup> millennium BC (FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA *et al.* 2019; ALEXANDROV – KAISER 2016). The burial customs in this period appear to be more heterogeneous: one sees multiple burials more often, some of the deceased were laid in an extended position, the number of grave goods is relatively high. Many of the elements can be compared to the burial traditions of the final Eneolithic in the North Black Sea region, which were classified and systematised by Yu. Ya. RASSAMAKIN (1999; 2004).

Thus, the earliest visible signs of contacts between the Eastern European steppe and the Lower Danube and neighbouring areas are not those in the burial mounds of the Yamnaya Culture: they appear earlier, starting in 3300 BC (FRÎNCULEASA *et al.* 2019, Fig. 6). It appears however that these successive immigrations came to an end with the extinction of the Yamnaya Culture, as catacomb graves are very rare in this area (KAISER 2003, 331–332). Changes in the burial customs of the Yamnaya Culture in the Balkans give reason to suspect that they were a result of contact with the population living in this area. Thus, the burial customs changed slowly, gradually making it impossible to identify conclusively traits of the Yamnaya. This circumstance might be another indication that it would be unwise to assume that there were large influxes of population in this period. It also contradicts the hypothesis put forth by Anthony that the immigrants from the steppe had taken up positions of social leadership within the local society, since one would expect the archaeological data to present a different picture if this were so. On the other hand – and I cannot stress this enough – it remains the case that the very limited findings relating to the funeral sphere still constitute the only basis we have upon which to assess cultural-history processes.

### **Second case study: Podolia and Małopolska (Lesser Poland)**

The situation in the area of south-eastern Poland and the adjacent territory in north-western Ukraine presents a completely different picture. For the past few years, intensive survey and excavation activity has been underway there, within the framework of joint Polish-Ukrainian projects (Baltic-Pontic Studies 2014; 2015; 2017). Graves exhibiting traits typical of the Corded Ware Culture are found in Małopolska, whereas burials of the Yamnaya Culture have been found in Podolia. Separating the two is a sort of corridor about 60 km wide (Fig. 6) (WŁODARCZAK 2017).

The burial mounds close by Yampil and Kamienka, in Podolia, which lies east of the Dniester in Ukraine, were systematically studied in one project. Piotr WŁODARCZAK (2014), who also analysed the graves of the Corded Ware Culture in Małopolska, concludes in his comparison of the burial mounds in the two regions that they differ markedly in terms of their structure, dimensions and grave goods. The Corded Ware Culture tumuli are noticeably smaller and often represent only a single-phase of construction, unlike the mounds that grew up over multiple phases in the steppe and forest steppe north of the Black Sea. The pits of the Yamnaya graves were frequently dug deeper into the soil than those of the Corded Ware Culture, and appear to be more complex due to the various elements, like posts built into the pits and other distinctive features they exhibit. Other differences emerge when one compares the inventories. At least one object was deposited with nearly every individual in a grave attributed to the Corded Ware Culture. In many cases, these are vessels, but it is rare to find forms associated with the Yamnaya Culture among them (WŁODARCZAK 2014, Fig. 17). In contrast, Svetlana V. IVANOVA and Gennadiy N. TOSHCHIEV (2015, Fig. 18.2,4,6) describe finding amphorae of the Corded Ware Culture in graves of the Yamnaya Culture in the burial mounds of Podolia.

These observations paint quite a different picture from that seen in the first case study, particularly as, in view of the evidence from palaeogenetic data indicating a strong input from the steppe starting with





Fig. 6. Sites of burial mounds of the Yamnaya Culture in the Prut-Dniester region and Podolia and the border of the dissemination of the Corded Ware Culture in Małopolska (after WŁODARCZAK 2017, Fig. 1)

the Corded Ware Culture, one would have expected to find stronger indications of steppe influence in the graves of the Corded Ware Culture, particularly in Podolia and Małopolska. Instead, the indications that do exist are limited to very general traits in the funeral sphere, which might give rise to the impression that a transformation of grave construction and burial rites had occurred at some time before the first Corded Ware graves were dug in Podolia.

### Comparison of the two case studies

Table 1 juxtaposes the main points emerging from the two case studies once again. The first evidence of exchange relations between communities in the Eastern European steppe and areas to the west of the



Black Sea appeared before 3000 BC. Graves attesting to heterogenic burial rite have been excavated in the West Pontic region. In many cases, these allow comparison with the Final Eneolithic burial traditions that RASSAMAKIN (1999; 2004) presented in detail for the northern Black Sea region.

Table 1. Comparison of the two case studies with respect to contacts with the north-western Pontic steppe

West Pontic area	Podolia and Małopolska
Mutual contacts (migrations) already in the 4 <sup>th</sup> mill. BC	
Construction of graves with Yamnaya Culture traits starting in 3000 BC Successive migrations until 2600 BC Transformation of the funeral rite – driven by contact with local population?	Podolia – Construction of graves with Yamnaya Culture traits starting in 3000 BC Małopolska – Construction of graves with Corded Ware Culture starting in 2900 BC (a result of transformation?)
Very few catacomb graves after 2500 BC	Podolia – Construction of catacomb graves between 2700 and 2500 BC Małopolska – Graves of the Corded Ware Culture, catacomb-like Corded Ware graves appear at some point

In the second case study, the line of division characteristic of the 3<sup>rd</sup> millennium BC can already be detected in the 4<sup>th</sup> millennium BC. The settlements of the Funnel Beaker Culture are spatially separate from the settlements of the final Trypillia Culture in Podolia (KRÓL 2019, 222–223 Fig. 2–3). For this period as well, D. Król reports blank spaces in the overall distribution of settlements. Based on research available thus far, it appears that there may have been a sort of corridor between the burial mounds of the Corded Ware Culture and those of the Yamnaya Culture, possibly caused by the presence of other population groups, groups that did not erect burial mounds. It is possible that these may have included the bearers of the Globular Amphora Culture (WŁODARCZAK 2014, 50–51).

In the West Pontic region, standardised burial customs are recorded beginning with the advent of the Yamnaya Culture, just as is the case in the steppe. However, unlike the steppe, contact with local population groups leads to changes in the burial customs in this region, at least in the part of it south of the Balkan range. Radiocarbon dates suggest that graves with typical Yamnaya traits, i.e. graves not showing evidence of transformation, also continue to be erected during the period from 3000 to 2600 BC. This is an indication of successive immigration from the steppe during this period.

In the same period, however, Podolia and Małopolska represent two quasi neighbouring regions, each with different funeral spheres, although there are some very general similarities, for instance, burial mounds were also built in the Corded Ware Culture. In Małopolska, when the Corded Ware Culture first appears, it already exhibits well-established burial standards. It is not possible to determine archaeologically the extent to which these may have been influenced by the Yamnaya Culture in the last century of the 4<sup>th</sup> and first century of the 3<sup>rd</sup> millennium BC. The grave structures and grave goods associated with the two cultures differ from one another in many respects, however. Still, the amphorae of the Corded Ware Culture that have been recovered from Yamnaya graves in the tumuli of the Yampil region do testify to contacts between these two regions during the first half of the 3<sup>rd</sup> millennium BC. Their presence in Yamnaya graves stands out in intriguing contrast to the near absence of Yamnaya Culture vessels outside of the steppe region.

Developments in the areas investigated in the two case studies follow different paths even after the end of the Yamnaya Culture. The culture does not appear to have had a lasting impact on burial customs in any of its exclaves in Southeastern Europe, as no uniform funeral tradition emerges there after the Yamnaya Culture. In Małopolska, though, catacomb-like burials (“niche grave constructions”, WŁODARCZAK 2014, 20–25) do begin to appear in association with the Corded Ware Culture, this being the only innovation in grave customs observed there. This is an indication of an influence from the steppes during the 3<sup>rd</sup> millennium BC. The standardised burial rites of the Corded Ware Culture continue to appear, including in Małopolska, until the end of the Central European Neolithic. The catacomb, as a grave structure, does not become widespread, but remains a regional phenomenon. Moreover, the Corded Ware Culture burial rites do not exhibit specific traits that can be traced archaeologically to the Yamnaya, unless one considers very general traits shared by the Yamnaya and Corded Ware Cultures: raising of burial mounds, crouched position of the deceased. Thus, the archaeological evidence runs in opposite direction to the palaeogenetic data, the proxies for population dynamics.

## Conclusion

The two case studies depict what are clearly different forms of interaction and (mutual) influences between communities associated with the north-western variant of the Yamnaya Culture and population groups inhabiting two different regions lying to the west of its area of dissemination. The mosaic of prehistoric graves is too fragmented: they permit the development of many possible scenarios, without providing enough solid evidence to render any of them truly convincing. Nonetheless, the fragmentary data that are available for the two regions – and again, these are restricted to the funeral sphere – suggest that different processes were unfolding in the two regions before, during and after the turn of the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC. Thus, they contradict the one great sweeping narrative of immigration on a massive scale by population groups from the Eastern European steppe, whose advance into Central Europe fundamentally changed the course of history.

Archaeologists face the task of charting the temporal dimension of the multi-layered processes that resulted in the palaeogenetic findings. The intensive study of grave complexes in several areas of Southeastern Europe has already shown that interactions with population groups from the steppe occurred there before 3000 BC. Furthermore, the period of the Yamnaya Culture stretches over several centuries, so contact and exchange with this culture went on over many generations; there is no need to reduce them to a few events over a relatively short period. Research on population dynamics in this period is only just beginning, and we should be wary of being too hasty, of adopting explanatory models that are too simplistic, if we wish to make full use of the new potential that the palaeogenetic data provide.

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# Deadly invaders – the possible role of contagious diseases in the European Copper Age / Bronze Age transition

MARTIN TRAUTMANN

## Abstract

*Ongoing research in archaeology, anthropology and palaeogenetics, as well as contributions from linguistics and archaeometry during the last decade is drawing an increasingly clearer picture of the interactions and developments in Europe during the late 4<sup>th</sup> and early 3<sup>rd</sup> millennium BC. Of interest are not only the cultural transformations, but also the changes in population biology. There is little doubt that the long-established Neolithic population of Europe with Near Eastern, Anatolian and Western Hunter-Gatherers roots was displaced by or mixed with groups originating from the western Eurasian steppe. The overall contribution of these steppe peoples seems way too pronounced to be explained by simple contact, transfer of ideology and some gene-flow. The mechanics of how the members of the steppe Yamnaya culture were able to exert such a high influence are still a matter of debate. Evidence for invasion, conquest and genocide is not convincing, and the time-span of these changes seems too short for natural population dynamics to have the observed effects. One explanation model, based on the recent discovery of plague pathogen aDNA in human remains from the Copper Age/Early Bronze Age, suggests the possibility of a plague epidemic that decimated the earlier farmer population in Europe and, thus, opened the way for a massive influx of new settlers from the steppes.*

*While on first glance this seems quite convincing, easily comparable to what happened in the New World with the arrival of settlers from Europe, a more detailed approach shows some inconsistencies that may or may not argue against a plague epidemic ca. 3000 BC that struck Europe. This essay presents considerations from an epidemiological point of view as to whether and how epidemic diseases may have contributed to a “Copper Age decline” that resulted in a changed cultural and genetic landscape in Europe.*

**Key words:** *epidemics, Copper Age decline, population replacement, Yamnaya expansion*

The turn from the 4<sup>th</sup> to the 3<sup>rd</sup> millennium BC marks a watershed in European prehistory. Widespread Copper Age/Early Bronze Age (hence CA/EBA) cultural traditions and structures that had existed for almost three millennia began to disintegrate rapidly. Within a relatively short time, settlement and subsistence modes changed profoundly, as did social and belief systems (KRISTIANSEN – LARSSON 2005; ANTHONY 2007; KRISTIANSEN 2014).

The recent surge of palaeogenetic studies not only garnered a high level of popular interest,<sup>1</sup> but also seemed to offer new venues of explanation for the archaeological phenomenon of cultural disruption. For decades, archaeologists had debated about the causative agents – basically, if a massive and possibly violent influx of new people happened or not (GIMBUTAS 1956; 1965; 1979; FURHOLT 2018).

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<sup>1</sup> [www.sciencemag.org/news/2017/02/thousands-horsemen-may-have-swept-bronze-age-europe-transforming-local-population#](http://www.sciencemag.org/news/2017/02/thousands-horsemen-may-have-swept-bronze-age-europe-transforming-local-population#) ; [www.nationalgeographic.com/culture/2019/07/first-europeans-immigrants-genetic-testing-feature/](http://www.nationalgeographic.com/culture/2019/07/first-europeans-immigrants-genetic-testing-feature/).

Now, it seemed, there was undeniable proof for actual change in the biological population, caused by an influx of people from the Eurasian steppe (ALLENTOFT *et al.* 2015; HAAK *et al.* 2015).

But still, how did that happen? Was there a large-scale immigration – perhaps even a violent invasion – with an ousting of whole populations and massacres? But then, how could a pastoral and possibly nomadic people muster the manpower to overwhelm a whole continent of long-established settlements within a few generations? Was it unparalleled aggression and violence? Military advantages like the use of horses? Or just a slow and effective infiltration of outsiders who may have had more successful subsistence practices, higher cultural or physical attractiveness, better health or higher fertility? Perhaps there was a pestilence that unfairly attacked the sedentary older Neolithic populations of Europe, but spared the newcomers? The latter would allow to avoid a problematic scenario of mass migration and conquest, which is not fully accepted (FURHOLT 2018). Even rather small and not overly aggressive groups of pioneers from the steppes would have had an easier time to replace a local population decimated and weakened by epidemics and a collapsed economic, social, and cultural system.

In this light, the discovery of ancient pathogen DNA of *Yersinia pestis* (the bacterium that causes the plague) in human remains dating from the CA/EBA (RASMUSSEN *et al.* 2015; RASCOVAN *et al.* 2019) was very welcome. Again, palaeogenetic research contributed important facts to explain the happenings in this pivotal epoch, and with the pandemic of Covid-19 in 2020, we all gained a first-hand impression of the impact an epidemic can have on human society and history. At least in the Western World, the importance of non-human agents of cultural change was almost forgotten for a century. Now, with the topics of climate change, environmental deterioration and epidemics, they come back into focus. But is the plague (or any other epidemic) really a good candidate to explain the end of the old Neolithic system in Europe and the success of the Yamnaya Complex and its heirs (ANDRADES VALTUEÑA *et al.* 2017; KRISTIANSEN *et al.* 2017)? This paper will discuss the biological and epidemiological aspects of contagious diseases and demographic and social impacts of a large-scale epidemic.

### Definitions and terminology

While *the* plague is a specific disease that is caused by the bacterium *Yersinia pestis*, the term *a* plague can signify any other infectious disease. To avoid confusion, the general term *epidemic* should be used.

By definition, an epidemic is a disease that affects a large number of individuals of a population in a defined geographical region within a short time. “Large number” is a relative term that depends on the baseline of incidence for a given infection; e.g. while an incidence of 15% for the common cold in Europe would not be considered epidemic, the same number of infections with cholera would be. Geographical regions today are usually defined by national boundaries, but may include several countries taken together (like “Central Europe” or “West Africa”). An epidemic that spreads over regional borders or continents may be labelled as a *pandemic*. “Short time” is even more blurred; usually it may mean weeks or months, but some epidemics can persist for years or decades, coming in waves. Some epidemics are *explosive*, causing *outbreaks* with a very high number of infections within a very short time (like smallpox), while others are *tarditive*, with a slow rate of spread (like leprosy). Some infectious diseases may stay present in a population persistently with a low rate of infection or retreat in confined reservoirs (like malaria) and become *endemic*.

While obesity or diabetes affects more people every year worldwide, these ailments may reach epidemic proportions, but are not epidemics *per se*, since they are not infectious. *Infectious* diseases are caused by pathogens like bacteria, viruses, fungi or parasites that can be transmitted from one individual to another. If a direct human-to-human infection is possible, a disease is called *contagious*.

Some infections usually affect animals, but can be transmitted to human hosts (like *rabies*). The term for such an infection is *zoonosis*; ca. 60% of all human infectious diseases are zoonoses (TAYLOR – LATHAM – WOOLHOUSE 2001).

One important characteristic of epidemics is their *pathogenicity*, the ability to cause detrimental symptoms or even death in their hosts. From an evolutionary point of view, high pathogenicity is a disadvantageous development, since a very sick or quickly dying host may hinder an organism's long-term survival and spread. A certain degree of *virulence*, the ability to reduce a host's fitness especially with regard to its immune response and spread in a host's body on the other hand is useful. Novel pathogens, usually recently mutated non-pathogens, can be highly pathogenic and virulent, but in the long term mitigate, since strains with less severe symptoms have better survival chances. A high *transmissibility* – meaning the ability to infect a new host – is always an advantageous trait for infectious organisms. This ability is influenced by many factors, mainly the number of pathogen cells necessary to infect an organism, the resilience to environmental conditions outside a host's body and ways of transmission. The last factor is a very important characteristic of a disease with regard to possible epidemics.

### Disease characteristics

Infectious diseases vary a lot in how they are transmitted, in their virulence, pathogenicity and their symptoms. To make them comparable and make assessments about their ability to cause epidemics, it is useful to discern certain traits.

*Transmission type* describes the way in which a host comes into contact with a given pathogen. *Common source* means that all potential hosts get infected by a certain reservoir of pathogens, such as a source of contaminated drinking water. *Propagated* diseases may spread from host to host and are therefore much more mobile, but can be stopped effectively by isolation.

*Transmission ways* characterise how a pathogen can attack a potential host. Some pathogens may be transmitted *airborne* in dust or droplets and usually attack a host via the respiratory tract. Others need direct *contact* and can be transmitted by ingestion or touching contaminated surfaces. Some use *vectors* like insects or other animals and are transmitted via the bloodstream by bites.

*Seasonality*: Many infections depend on the occurrence of certain climate conditions like minimum temperature or high air moisture, or on the availability of vectors to spread. This may result in a more or less pronounced seasonality, with an epidemic restricted to a certain time period of the year.

*Attack Rate* subsumes the transmissibility and virulence of a given pathogen, but is affected by other factors like innate resilience or acquired immunity in a host population. The attack rate gives a percentage of individuals of a population at risk who come into contact with the germ and get effectively infected.

*Incubation Period*: Some pathogens need only a few hours after infection to cause disease symptoms, others take days, weeks or even months. Also, some diseases are already infectious during the incubation period, while others can only be transmitted when the infection is symptomatic.

*Lethality* or *Mortality* is an estimate of how many individuals who got infected by a certain disease die because of it. These numbers are usually rough estimates, since opportunistic secondary infections or pre-existing illnesses play a role, and some infections can be lethal a long time after infection or by indirect means (like hepatitis, tbc or HIV), which hampers statistical assessment.

*Acquired Immunity*: After an infection, the host's immune system usually starts a reaction to fight the pathogens. Besides other processes, this may produce specific memory B-cells that provide the immune system with lasting "blueprints" to quickly recognize this pathogen's antigen markers and produce



antibodies as an immediate reaction. Against some pathogens, these antibodies and memory B-cells are rather long-lived and provide persistent immunity against further infections. This process is called active immunisation. Also, some antibodies are transferred intra-uterine or by breastfeeding from mother to child; this is called passive immunisation. The effectiveness of immunisation varies a lot with different pathogens; against some, it is complete and life-long, against others, the protection is only partial or of limited duration. Against some diseases, there is no immunisation at all.

*Pathogen Survival:* Many pathogens cannot survive for long outside a host's body in cold, hot or dry climates or are easily destroyed by the sun's radiation. Others can be very resilient and survive for years as spores or in intermediate hosts, and thus stay infectious for a long time.

### Population characteristics

When considering the possible danger an infectious disease poses to a population – today or in the past – one not only has to take the disease's traits into account, but also the population at risk. The factors that account predominantly for the impact an epidemic may have on a population are:

*Population Size:* While the absolute size of a population in number of individuals does not influence the course of an epidemic, it is an important aspect nevertheless. When a plague kills off a certain percentage of a population, in small groups the remaining number may be too small to sustain itself further economically or as a reproductive community and, thus, die out as an indirect result of the plague. Also, population size is often connected to *Population Density*, a very important factor with regard to the spread of contagions. Population density is given as the ratio of individuals per area, and varies a lot regionally (e.g. today's Japan 334/km<sup>2</sup>, Mongolia 1.97/km<sup>2</sup>). Moreover, urban centres often show extremely high population densities (e.g. Tokyo 6,349/km<sup>2</sup>). Even more important and often, but not exclusively, promoted by a high population density is the *Contact Rate* of individuals, which determines how many different persons an individual has contact with in a certain stretch of time. High population density and high individual and communal mobility promotes the spread of diseases of the propagated transmission type.

*Hygiene* as a practice to maintain health has a long history, from the communal bathes of the Bronze Age Indus culture and ancient Greece or Rome to the medieval bathhouses. While historically, contaminated water, spoiled food or lacking cleanliness were understood as dangerous, effective public hygiene was rare and usually a hallmark of highly structured and developed societies, often lacking in fast-growing settlement centres. Also, environmental factors like the proximity to wetlands or keeping livestock within the settlement could contribute to the risk of infectious diseases. Lastly, the *Health Status* of a population is of high importance; malnourished and stressed individuals usually have a weakened immune response and are therefore more prone to infections. Likewise, very old or very young individuals or those with pre-existing illnesses are more likely to catch an infection and develop more severe symptoms.

Some individuals or parts of a population may have *Innate Resilience* or immunity to certain diseases due to their genetic make-up; in other cases, many individuals may have acquired immunity against a specific infection due to earlier contacts with the pathogen. A population with a sufficient rate of immune individuals provides indirect protection to non-immune members by a higher probability to disrupt chains of infection within the population. This effect is called *Herd Immunity*.

Taking these factors in consideration, it is obvious that emerging urban centres were especially vulnerable to epidemics, because of a high contact rate, the constant influx of strangers, unhealthy

environments (contaminated water, polluted air, lack of fresh foods), and stress caused by cramped living conditions (TAYLOR – LATHAM – WOOLHOUSE 2001).

### **The historical importance of natural resistance**

With regard to the impact plagues may have had on populations in the past, we have to keep in mind that there were no intensive care units, no antibiotics and no disinfectants of relevance. Mostly, there wasn't even an understanding of how diseases spread and how the spread may be halted (although isolation and quarantine measures were reported from the 14<sup>th</sup> century AD onwards, and to some rudimentary extent even in antiquity (DREWS 2013). As defined by the CDC, *isolation* separates sick people with a contagious disease from people who are not sick. *Quarantine* separates and restricts the movement of people who were exposed to a contagious disease to see if they become sick. Therefore, we can expect an almost unhindered progress of epidemics within pre-modern societies. What made the difference between a limited outbreak and a disaster were the population characteristics with regard to vulnerability against an epidemic as described above, especially the average immune competence (IC) of individuals.

To avoid infection, humans (as most other mammals) have several lines of defence. The first are the physical and chemical barriers of the skin, the mucous membranes and the ciliated epithelium. The second is the cellular response, the innate and unspecific reaction to all foreign substances that enter the body. At this stage, different types of phagocytes engulf, disable and dissolve the contaminant. The third element is the humoral response; the phagocytes present characteristic elements (*antigens*) of the dissolved pathogens to lymphocytes and so initiate the production of antibodies, which specifically and effectively attack the pathogen. One important additional phenomenon is the possible cross-protection against one pathogen by acquired immunity against another pathogen with similar antigen features. Because of this, exposure to one mild disease may confer acquired immunity against a related, dangerous infection (like with cowpox and smallpox).

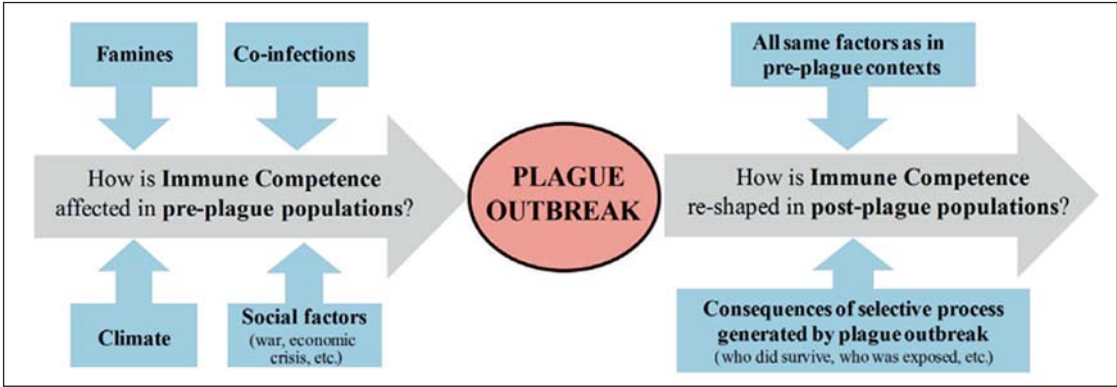
While these mechanisms are basically the same in all members of a species, due to slight genetic variance (like SNP single nucleotide polymorphisms or even larger variants), differences between individuals within a given population are to be expected. Some may be more resistant to certain diseases (either the infection itself or its effects) than others; even with equal risk of infection, the outcome for individuals in the same population will differ (CRESPO – LAWRENZ 2014, 238).

Also, different populations or sub-populations may have a higher or lower frequency of alleles that make them more or less resilient to certain pathogens. Prolonged exposure to a possibly lethal pathogen will increase the frequency of alleles that promote resistance in a population by selective pressure, even if this trait has disadvantages. The best-known example for this effect is the sickle-cell anaemia / thalassaemia mutation in certain populations that provides protection against malaria.

But it's important to keep in mind that the humoral specific immune response is not hereditary! Individuals who acquired active immunity against a certain disease will not permanently pass this immunity to offspring (passive immunisation via breastfeeding is limited and only temporary). Therefore, a population cannot gain global immunity against a certain pathogen by one-time contact. It will be naïve to the infection again in the next generation at the latest. The only way a population may develop a basic natural resistance against an infection is by prolonged exposure over generations and therefore evolutionary selection.

In the end, it is the unspecific cellular immune response that constitutes the main factor of how resistant a population is to a pathogen's attack. Since the first and second line of immune defence is tested every day in every individual in every population, they tend to be genetically optimised, so

profound genetic differences between populations which are in contact with each other are not very probable. As a result, it must be assumed that environmental factors that influence the groups’ immune competence were of greater importance (*Fig. 1*) (CRESPO – LAWRENZ 2014, 251).



*Fig. 1. Proposed multifactorial model for understanding the impact of biological, ecological, and social factors on human immune competence (IC) before, during, and after plague outbreaks (after CRESPO – LAWRENZ 2014, 251, Graph 6)*

In a way, this is fortunate when studying epidemics in the past, since information about climate, diet, closeness of livestock or social stress are often available as a result of other research goals.

**Modelling epidemics**

There are several deterministic mathematic models to predict the spread and possible death rates of epidemics in populations, like the SIR (Susceptible-Infected-Removed-Model that assumes the acquisition of immunity) or the SIS model (without development of immunity), based on Kermack–McKendrick theory (KERMACK – MCKENDRICK 1927; HEATHCOTE 2000; BRITTON 2003).

Such models suffer from mathematically necessary simplifications – they cannot take all aspects of disease and population traits as described above into account. The difficulty is not only the number of different parameters, but also their non-binary character. Also, for many diseases their characteristics are still not well-researched or show a high variability in different studies. In essence, these models are only of theoretical value for studying contemporary epidemics, and mostly useless for modelling ancient plagues.

To tackle these problems, newer methods like stochastic and spatial models, discrete-time or chain-binomial models are developed, or computer-assisted simulations like the Monte-Carlo techniques, System Dynamics or Agent-based simulations (BRAUER – CASTILLO-CHÁVEZ 2001; BAGNI – BERCHI – CARIELLO 2002; CHOISY – GUÉGAN – ROHANI 2007; VYNNYCKY – WHITE 2010; KUMAR – GOEL – NILAM 2020). Other approaches use demographic parameters of cemetery populations to reconstruct catastrophic death assemblies (DURING 2019). Although these methods are better in respecting more parameters, they are still only as good as the basic data about a given disease available. With regard to epidemics in the past, this is a severely limiting factor of their usefulness.

## Understanding epidemics

To understand the dangers that epidemics pose to a population, it is necessary to differentiate between immediate and secondary effects.

*Immediate effects* are the proportion of individuals getting sick, the severity and duration of symptoms, and the rate of mortality. An epidemic with a low count of infections, or rather trivial symptoms, or full recovery within a short time, or a neglectable death rate usually has limited or no impact on demography. For example, leprosy with its severe and persistent symptoms but very low attack rate is effectively as irrelevant with regard to biological parameters as the highly contagious common cold with its mild symptoms and fast recovery.

To affect a population's demography, a disease must have a very high attack rate *plus* a high mortality. In reality, epidemics that directly wipe out whole populations are very uncommon, and most populations recover biologically within a short period of time (Düring pers. comm.; LANGER 1964).

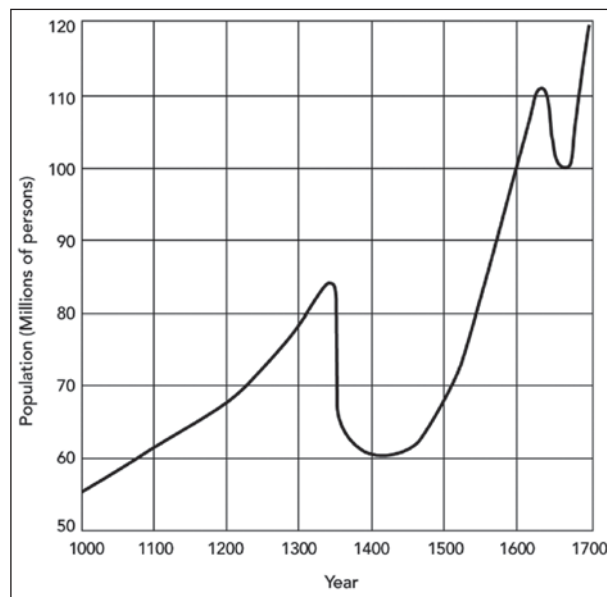


Fig. 2. Reconstruction of Europe's population development between 1000 and 1700 AD. The increased growth rate following the sudden collapse in population size after the Black Death in the 14<sup>th</sup> century and the Thirty Years War in the 17<sup>th</sup> century with accompanying epidemic waves demonstrates a strong recovery response (wikicommons after LANGER 1964)

A very delicate balance of traits in a pathogen would be necessary in order to affect a host population's demography in a profound way. Too mild, and it would not have any visible effect; too harsh, and it will die out after affecting only a small proportion of the whole target population, because it will be fought with determination or because it kills its hosts too fast and therefore stops its own propagation (burn-out effect).

*Secondary effects* are the economic and social repercussions an epidemic may have on a society. Their impact can be much higher in the end, causing the disruption of established social systems and cultural traditions. To have severe consequences, a plague does not have to be especially deadly; besides the loss of lives and therefore productivity of a society, it's the element of scare and terror that inflicts the most damage. When people start to flee the deadly miasma of their settlements or avoid others for fear

of contagion, networks of mutual support break down. Missing labour force in the agrarian sector may cause food shortages; the disruption of social and trade networks and the loss of specialists can lead to a lack of necessary special resources. Uncertainty and social unrest can discharge into internal struggles for resources or violence against certain subgroups that become scapegoats for the misery. All this social turmoil may lead to a loss of trust in secular and spiritual authorities, a change of values, and in the worst case to the disintegration of settlements, social and cultural systems (ALFANI – MURPHY 2017, 330 f.). Obviously, complex cultural structures based on specialists, logistic networks and cooperation are more vulnerable than self-sustaining simple organizational forms of societies. On the other hand, a sudden population decrease and break-up of structures may be beneficial to the remaining population, allowing for an increase in per capita wealth, more equal and higher resource distribution, higher wages and opportunities of social rise (FRIEDEL 1927; HERLIHY – KLINE-COHN 2001) – which would help to explain the fast recovery in population size after a crisis, as described above (Fig. 2).

On the whole, a general prediction of the exact consequences of an epidemic is impossible; historic examples show varying outcomes, sometimes regionally within the same system. To always assume a catastrophic result would be too heavy-handed; human societies can be very adaptable, and the circumstances of different epidemics vary a lot. They do not, by any means, generally result in the end of the affected society, but often have transformative effects.<sup>2</sup>

Crises and collapses are frequently, perhaps inexorably, the fate of complex systems like human cultures. But they also frequently pave the way for new, often more effective systems (BARDI 2020; 2017; TAINTER 1990), as the renaissance boom after the Black Plague and the economic boom after World War II demonstrate.

## Understanding the Plague

All phenotypes of the true plague, i.e. the bubonic plague, the pneumonic plague, and the septicemic plague are caused by the gram-negative bacterium *Yersinia pestis*. The genus *Yersinia* encompasses twenty species, many of them ubiquitous microorganisms of the soil and water. Some species are of limited to high pathogenicity, especially *Y. pestis*, *Y. enterocolitica* and *Y. pseudotuberculosis*. *Y. pestis* is assumed to have evolved from *Y. pseudotuberculosis* at least 5000 years ago (ACHTMAN *et al.* 1999; RASMUSSEN *et al.* 2015).

Yersiniosis is a zoonosis, i.e. an animal disease that may be transmitted to human hosts. Birds, rodents and canines are most often affected, but bovines and caprids or especially pigs are also susceptible. The germs can be transmitted via excrements and drinking water, or by eating contaminated food. *Yersinia* is a very resistant microbe and can stay infectious for weeks in cadavers or soil; also, there is the possibility that *Yersinia* is able to survive in amoebae, using the encapsulation, possibly in spore form, for additional protection (MARKMAN *et al.* 2018).

In humans, the disease is rarely lethal, but infectious for a long time, and causes severe and sometimes long-lasting symptoms. In pre-modern societies with intense animal contact (hunting or animal husbandry) and low food hygiene, these pathogens can be considered to have been omnipresent. Nevertheless, the attack rate seems rather low and infections are rare today<sup>3</sup>.

*Y. pestis* genetically differs from *Y. pseudotuberculosis* mainly by two additional plasmids, pPCP1 (or pPla) and pMT1 (or pFra), and the pathogenicity island HPI. These are responsible for the high virulence and pathogenicity of the plague. The three so far known biovars with several strains, called *antiqua*,

<sup>2</sup> For examples, see [www.environmentandsociety.org/mml/pandemics-context](http://www.environmentandsociety.org/mml/pandemics-context).

<sup>3</sup> [www.rki.de/DE/Content/Infekt/EpidBull/Merkblaetter/Ratgeber\\_Yersiniose.html](http://www.rki.de/DE/Content/Infekt/EpidBull/Merkblaetter/Ratgeber_Yersiniose.html).



*medievalis* and *orientalis*, also differ genetically (LATHEM *et al.* 2007). Like *Y. pseudotuberculosis*, *Y. pestis* may also affect a broad spectrum of mammal and bird hosts (KELLY 2005, 35).

*Y. pestis* evolved several mechanisms that help it overcome a host's immune defence lines. First, by using arthropod (mainly flea) bites as carriers for direct invasion, *Y. pestis* breaks the first line of defence, the surface barriers of skin and mucous membranes. While this might seem simple, in fact it isn't. First, the bacterium needs a protective outer layer to survive the flea's digestive tract. The microbe's ability to resist phagocytosis by producing protective surface layers helps with that. Second, to avoid quick passage, *Y. pestis* developed the ability to form a stable biofilm in the flea's *proventriculus* (foregut). In time, this blocks the flea's digestive tract and leads to regurgitation while feeding on a warm-blooded host. These regurgitated fluids inject a high number of bacteria into the host, thus increasing its virulence.

By producing an outer layer that protects it from phagocytosis and the ability to ride the phagocytes unharmed, the pathogen avoids the second line. The pathogen escapes the cellular immune response by cell-surface antigens known as *Yersinia outer proteins* or *Yops* and avoids detection (ANDERSON *et al.* 2009). It allows the bacteria to survive internalization by macrophages and be transported to lymph nodes; there *Y. pestis* causes apoptosis of immune cells, becomes extracellular and causes necrosis (SEBBANE *et al.* 2006).

Third, by disabling antigen presentation and therefore a specific humoral response, but also by preventing the release of cytokine and other signal pathways and by destroying lymphatic tissue, *Y. pestis* disables the third line of defence. When entering the lymph nodes, bacterial masses and pus form the swollen *buboes* typical for the bubonic plague. After propagation by blood and lymph vessels, the invasive germ may form herds in the lungs that break from coughing and, therefore, produce a highly infectious aerosol that causes direct infection via inhalation, the pneumonic plague. Without effective resistance, the body is flooded by the pathogen, and rapid cell death ensues through massive release of endotoxins. This can lead to the septicemic form of plague that is recognizable from the clotting of blood vessels and gangrene.

Recent research shows that at least some of the virulence-increasing factors *Y. pestis* attained when branching from *Y. pseudotuberculosis* may have been horizontally acquired by the incorporation of a region in their DNA the bacteria got from a bacteriophage virus. Bacteriophages are viruses that infect bacteria; most kill their host in the process, but some filamentous phages (genus *Inovirus*) in a way fuse with their host, posing a neglectable burden but providing new and sometimes advantageous abilities. Results show that the transformation of *Y. pestis* from a predecessor of mediocre virulence was accompanied by the acquisition of gene code from an unstable filamentous phage. Comparison of the genomic sequence of *Y. pseudotuberculosis* with that of *Y. pestis* showed chromosomal regions in the latter that the former didn't possess. Among them, one region is homologous to a putative filamentous prophage, named Ypf $\phi$ . The region was not identically present in all biovars and strains, so it was possibly unstable and could get lost. The most likely explanation would be that Ypf $\phi$  has been acquired horizontally as an unstable episome by the *Y. pestis* ancestor (DERBISE *et al.* 2007).

Because *Yersinia pestis* is so highly invasive and virulent and targets the immune system first, human hosts do not develop acquired immunity against the plague. Even if a patient survives, a later second infection is possible and will not take a milder course (RAKIN 2003; CRESPO – LAWRENZ 2014, 232, 243).

## Outbreaks in history

By far the most prominent plague in the memory of the Western World is the Black Death that descended on Europe between 1346 and 1353 AD (BRAMANTI *et al.* 2016). This pandemic presumably started in

Central Asia and spread rapidly to the Near and Middle East and Europe; whether India and China were also affected in the same extent seems a matter of debate (KOHN 2008, 208; SUSSMAN 2011).

In Europe, the Black Death killed an estimated 25-60% of the whole population, or up to 50 million people (BENEDICTOW 2012) within only seven years. After that, it stayed for almost four centuries in Europe as an endemic disease with several and sometimes catastrophic outbreaks (like the Great Plague of London 1665/66). An earlier occurrence of the plague, also with disastrous dimensions, was the so-called Justinian Plague of 541 to 544 AD. It also became endemic and stayed until ca 770 AD in Europe; during these three centuries, it recurred in at least 17 waves. This pandemic may have had its roots in the Libyan bubonic plague of the 1<sup>st</sup> century AD and possibly in even earlier events in the Near East (KOHN 2008, 226). It can be assumed that the plague was endemically present in this region after earlier outbreaks. A reliable identification of both pandemics as the bubonic plague, caused by *Yersinia pestis*, was not only possible by historical accounts, but also by palaeogenetic means (Bos *et al.* 2011; Bos *et al.* 2012; SCHUENEMANN *et al.* 2011; HARBECK *et al.* 2013).

Therefore, for both epidemics, *Yersinia pestis* as (main?) pathogen has been proven. Both had their origins in the Near or Middle East; both were spread by merchants to hubs of long-distance trade and were further propagated by trade networks, often by maritime import. Both killed approximately from one third to half of Europe's population within a few years and stayed endemic with recurring outbreaks for ca. 300 years, then vanished. The cause for these sudden outbreaks, periods of endemic presence and finally disappearance cannot be explained satisfactorily so far; attempts to synchronize them with climatic changes are tenuous at best (BÜNTGEN *et al.* 2011). It seems there was no single external reason why the plague showed this fickle behaviour; the most probable reason were mutations that lead to different strains of *Y. pestis*, some of them with higher, some with lower virulence and lethality (SPYROU *et al.* 2019). With further research, it became apparent that the Justinian plague or even the Libyan bubonic plague weren't the first occurrences of this disease; palaeogenetic analyses begin to show a much deeper temporal dimension.

One of the first large-scale surveys for the prehistoric plague (RASMUSSEN *et al.* 2015) demonstrated that as early as in the 3<sup>rd</sup> millennium BC, *Y. pestis* was present in populations of Central Europe, the Baltic, Russia and Southern Siberia as far as to the Mongolian border. Chronologically, a geographical cline is not recognizable; apparently, the plague was already established as an endemic disease in the whole region between 3000 and 2600 BC ((RASMUSSEN *et al.* 2015, 572, Fig. 1).), although the sampling is limited. The authors also calculated the divergence date of *Y. pestis* and *Y. pseudotuberculosis* and got the astonishingly old MRCA (most recent common ancestor) date of ca. 55 K years ago, while the MRCA of *Y. pestis* strains existed ca. 5.8 K years ago. This could be interpreted as follows: a) the plague had already existed at least as an animal disease for more than 50.000 years, and b) *Y. pestis* spread to different hosts, geographical regions and / or environments about 6000 years ago and thus diversified.

Interestingly, all studied strains showed the genetic make-up that is associated with the plague's virulence, except for the *ymt*-gene. This gene is assumed to encode the phospholipidase D that enables the pathogen to survive in the flea gut and thus the ability to use fleas as transmission vectors. From this, the authors conclude that the Early Bronze Age strains of the plague were not transmissible by arthropods, therefore not able to cause the bubonic form of the plague, and therefore were spread only as the contagious form of pneumonic plague.

Somewhat contradicting this, ca. 3800 years old finds from Bronze Age Russia revealed a strain of *Y. pestis* in two individuals from the Srubnaya culture that was able to use arthropods like fleas as a vector and cause the bubonic form of the plague (SPYROU *et al.* 2018).

The oldest evidence for *Y. pestis* as a human disease pathogen so far does not come from Inner Asia, which historically seems to be the hotbed of the plague, but from Sweden (RASCOVAN *et al.* 2019). At least

two individuals from a passage grave at Frälsegården in Gökhem parish, Falbygden in western Sweden, belonging to the Neolithic farmer Funnel Beaker culture, were infected with *Y. pestis*. The radiocarbon date of 5100–4900 BP is even older than the finds mentioned earlier (RASMUSSEN *et al.* 2015). The *Y. pestis* strain discovered here (Gok2) was deemed basal to the Bronze Age clade and not part of it. Using molecular clock calculations, Gok2 diverged from the other strains ca. 5700 BP, the Bronze Age strains did so ca. 5300 BP, and the modern clade of plague strains in China ca. 5100 BP. Altogether, a large-scale branching and radiation happened between 5700 and 5100 years ago. It therefore seemed plausible to propose a Eurasian plague pandemic in the 4<sup>th</sup> millennium BC that happened before the steppe expansion.

The plague is not the only pestilence with high fatalities; Influenza may be the deadliest fast-acting disease with frequent pandemics (for example in 2009/10, 2004–16, 2004/05, 1995/96, 1977/78, 1968–70, 1957/58, 1918–20 or 1889/90). The Spanish Flu of 1918 to 1920 alone had an estimated death toll of 20 to 50 million, perhaps even 100 million people.

Smallpox were endemic in the Old World since prehistoric times; they had a few outbreaks and got more dangerous after the 16<sup>th</sup> century AD, until they were eradicated in the 20<sup>th</sup> century, thanks to effective vaccination.

Cholera is described in Sanskrit sources of the 5<sup>th</sup> century BC (HARRIS *et al.* 2012), but seems to have been limited to the Indian subcontinent until 1817 when it started the first of seven pandemic waves, the latest still rolling over the globe.

Tuberculosis may well be the oldest epidemic that plagues mankind and other mammals (ROTHSCHILD *et al.* 2001; HERSHKOVITZ *et al.* 2008), also leading the death count. The disease seems to be one of the oldest contagions with global distribution, and despite its rather low attack rate was responsible for ca. 25% of deaths in Europe in the 19<sup>th</sup> century AD. In contrast to most other epidemic diseases, tbc often leaves lesions on the skeleton and can therefore be detected rather easily in archaeological material. It can be observed regularly in European skeletons from between 1600 and 1900 AD, but appears not often in earlier contexts.

Dysentery caused by *Shigella sonnei*, *Entamoeba histolytica* or EHEC affects today more than 200 mio. per year with a death rate of ca. 1%. In pre-modern times, dysenteries may be one of the most common causes for infant deaths, as in today's third world countries.

When putting all epidemics together, it seems that humankind was under constant assault of a plethora of diseases.<sup>4</sup> But none of them can be blamed to have effectively destroyed a whole population or culture by themselves. In hindsight it seems that human societies were good at coping with even the most disastrous effects of epidemics (ANDERSON – MAY 2009). However, they may have been trailblazers for invasions and conquests that came at the same time or may have caused economic crises that in the end had this effect.

### **Epidemics in Eastern European Copper Age?**

When considering the plague as a possible driving agent of the Copper Age decline in Europe and the ensuing Yamnaya expansion, it is not enough to acknowledge its mere presence as proven by a few scattered pathogen aDNA finds; it is necessary to evaluate the actual impact this or any other infectious disease may have had on populations and societies. One way to do so is by applying the aforementioned criteria to what we know about the situation in the later 4<sup>th</sup> and earlier 3<sup>rd</sup> millennium BC.

<sup>4</sup> [https://en.wikipedia.org/wiki/List\\_of\\_epidemics](https://en.wikipedia.org/wiki/List_of_epidemics).

### Disease characteristics

*Y. pestis* is definitely the pathogen that causes all forms of the plague, and several of the CA/EBA strains of *Y. pestis* showed the genetic markers for high virulence and pathogenicity (ZIMBLER *et al.* 2015; SPYROU *et al.* 2019). The oldest pathogenic types of this microbe were evidently already present in Europe ca. 3700–3100 BC (RASCOVAN *et al.* 2019). And while some of the early strains seem to have been unable to effectively use arthropods like fleas as vectors, at least one strain had the genetic make-up to do so (SPYROU *et al.* 2018). Furthermore, the ability to survive a flea's intestinal tract and to block its proventriculus seems not an obligatory prerequisite (EISEN *et al.* 2006; VETTER *et al.* 2010) for *Y. pestis* to be transmitted by insect bites, as assumed in earlier literature. In effect, some of the earliest strains of *Y. pestis* had at least the potential to cause the bubonic form of the plague in addition to the pneumonic form.

This is more important than it seems; with an extremely short incubation time, foudroyant and severe progress, and almost 100% lethality on the one hand, but limited ways of transmission and lower pathogen survival in the environment on the other hand, the pneumonic plague's spread would be restricted to short distances. In fact, an infected person would have no more than 1 to 3 days to travel from one settlement to the next and bring the contagion with him. Therefore, local outbreaks would have had good chances to die out together with their hosts before they even had the chance to spread.

The bubonic form is much better suited to long-distance dissemination and is therefore able to cause a pandemic even in a setting with widely scattered settlements and infrequent and slow travel means.

The wide geographic spread of cases from Central Europe to Southern Siberia and the genetic diversity of different strains is evidence for a long-lasting and widespread presence of *Y. pestis* in Eurasia even before the 3<sup>rd</sup> millennium BC. There is no reason to assume that the CA/EBA plague was unable to endure endemically in certain regions for decades or centuries, causing intermittent outbreaks.

However, there were also limiting factors: The iconic propagator of the plague, the rat, was not present in human settlements in the CA/EBA. The Black Rat *Rattus rattus*, originally from South and East Asia, appeared first in the 2<sup>nd</sup> millennium BC in today's Iran, but became widespread in Europe only after Roman times; the Brown Rat *Rattus norvegicus* was introduced from East Asia after 1600 AD. The mouse *Mus musculus* came to Europe as commensal species during the Early Neolithic (CUCCHI – VIGNE – AUFFRAY 2005; STOLZE 2017), but is rather ineffective as a plague vector (POLLITZER 1954, 299f.).

In essence, the only reservoirs for the plague would have been wild populations of rodents and hares, which may have been hunted for fur or food (FIEDLER 1990). And even if hunting such animals was not common, roaming dogs may have captured wild rodents and thus brought infected fleas or the pathogen itself to human settlements.

As a conclusion, it can be stated that *Y. pestis* probably posed a lower risk to humans in the CA/EBA than in historic times. We should expect an endemic presence in the sylvatic reservoir with sporadic and mostly local or regional outbreaks, predominantly of the self-limiting pneumonic form.

### Population characteristics

Estimations of population density in Neolithic and Copper Age Europe are difficult to obtain; some authors use the number of households in well-researched regions for extrapolations, others base their assumptions on the number of burials or on levels of migration behaviour or on environmental proxies (ZIMMERMANN – HILPERT – WENDT 2009; SVIZZERO 2015; FEESER *et al.* 2019; LAABS 2019).

When estimating numbers based on modern populations, factors like subsistence methods, the level of urbanisation, the percentage of suitable land and climate conditions have to be taken into account. Census data of more or less temperate countries with variable topographical relief and only recent or limited industrialisation like Norway, Finland, Argentina, New Zealand or Uruguay, today have a population density between 14 and 19 P/km<sup>2</sup>, while census data from Finland or Sweden 250 or 200 years ago were only 20 to 25% of that (data collected from *Wikipedia* and *Worldometers*). Taking these figures into account, a global population density in Europe below 3 P/km<sup>2</sup> is plausible – equivalent to that of today's Mongolia, Australia or Canada. Of course, differences in local and global density (ZIMMERMANN – HILPERT – WENDT 2009) must have been considerable – with the extreme of megavillages of several thousand inhabitants of the Trypillia Culture in Southeastern Europe (OHLRAU *et al.* 2016). Such population agglomerations are naturally very much at risk to be hit by epidemic outbreaks, especially when sanitation and hygiene are primitive. So far, unfortunately, we only have a very limited record of human remains from this culture context (LILLIE *et al.* 2017), and recent aDNA tests for *Y. pestis* were negative (IMMEL *et al.* 2020).

While intensive agriculture on fertile soil can support very large population clusters due to a high yield of calories per hectare (KIRLEIS – DREIBRODT 2016), pastoral societies generally have a much lower population density. If mobile pastoralism was indeed the main subsistence method of the Yamnaya culture complex, it would have provided at least slight protection against an epidemic spread of disease. Data from the Covid19 pandemic in 2020 show a strong correlation of countries or regions with low population density and a slow and limited spread of infections.

At least for Southeastern Europe – and probably for some other regions in Europe – we can assume a population density and a network of contacts and exchange (ROTH 2008, 780f., 927f.; MELLER – FRIEDERICH 2017) that was sufficient to support the spread of some contagious diseases. And while some goods like flint, amber or salt were neutral to the transport of pathogens, others like livestock, hides, textiles or grain even promoted it. At least “slow and enduring” infections, i.e. those with long incubation periods and pathogens that can survive outside the hosts for weeks or months, may have been able to reach most settlements. A good example of such processes is provided by the historical documentation of the Black Death in rural and sparsely populated Norway from 1349 onwards (BENEDICTOW 2002; 2012).

With ubiquitous ectoparasites, frequent close physical contact with each other, domestic and wild animals, and rudimentary hygiene, humans in pre-modern societies had a high risk of infection. Since therapeutic options were also limited, the deciding factor for life or death was individual resilience.

With regard to the Yamnaya and pre-Yamnaya populations, there are very limited data for comparing health status, hygiene or immune competence, but preliminary results from Romania and Bulgaria (author in prep.) on Yamnaya and pre-Yamnaya skeletons suggest some differences in the general health status. Skeletons from Yamnaya burials impose as tall, robust and healthy. Symptoms of non-specific infections are almost non-existent, there are no indicators of food deficiencies, and dental health is very good. Pre-Yamnaya individuals are generally smaller, more gracile, and show a higher incidence of infections, tooth decay and stress markers, although their overall health status still seems better compared to many medieval or early modern samples. Again, Yamnaya populations with their extraordinary good health status may have had a slight advantage with regard to their resilience to infections. In this context, another interesting observation is the fact that cow milk fortifies the immune system – especially of the naso-pharyngeal and alimentary tract – possibly by altering the microbiome, by the local action of bovine immunoglobulines (IgG), and by sialylated oligosaccharides, which may shield mucous membranes from pathogen invasion and inflammation. Furthermore, milk is an additional source of vitamins A and D3, both essential for the immune systems functioning. These effects are pronounced in raw milk, but



not in processed milk. This benefit of raw milk consumption may have been a contributing factor to the strong positive selection of lactase persistence in Europe (PERDIJK *et al.* 2018).

As presumed cattle-herders, Yamnaya groups should have had no dearth of milk; but whether they made extensive use of raw milk and profited from a higher resilience to some infections needs to be studied further. Furthermore, it is unlikely that they had a higher risk of catching parasites or zoonoses from their livestock compared to their sedentary neighbours, who also lived in close vicinity to their farm animals.

Summarily, there are arguments that populations of steppe-dwelling, pastoral and mobile cattle-breeders of the Yamnaya Culture would have had a higher resilience against contagious diseases simply because of their lifestyle and diet. These advantages would have been effective even against infections that do not allow the development of post-infectious immunity.

### Consequences

RASCOVAN *et al.* (2019) discuss the role a plague pandemic may have played in the Copper Age decline; while their assumption that new pathogenic microbes predominantly emerge in densely populated settlements under poor hygienic conditions is somewhat incorrect, these are surely the places where novel pathogens can thrive and establish themselves. The authors suggest that epidemic waves may have contributed to the abandonment of the Trypillian mega-settlements, and a general decrease in settlements and populations throughout Europe.

This seems plausible; due to beginning labour division (KORVIN-PIOTROVSKIY *et al.* 2016) and high demand of resources (KIRLEIS – DAL CORSO 2016), these very large settlements would have required some kind of exchange network and organised logistics (MÜLLER 2016). Historical epidemic events show that such networks are very vulnerable to the loss of manpower and contacts due to casualties, distrust and isolation. This would easily result in the visible collapse of complex settlement centres, while scattered hamlets and farms would just decrease in geographical density for a while. In non-sedentary groups, the effects of an epidemic may be archaeologically invisible.

Although the impact of epidemics on human populations, societies and economics is often overrated, catastrophic epidemics – especially when occurring during a political or economic crisis – have the potential to persistently damage complex systems. Highly complicated organisational structures with many contributing parts naturally provide disruptive factors more leverage than simpler systems. By and large, this would mean the “town-and-trade”-system of the CA/EBA in Southeastern Europe would have suffered much more from any catastrophic event than the more independent and self-sufficient pastoral groups of the steppe.

### Results

Summarily, a contribution of epidemics to the profound cultural and population changes observed in the late 4<sup>th</sup> millennium BC seems convincing. In contrast to earlier times, some settlement cells had reached the critical thresholds of population size, population density, organisational complexity and level of contact and exchange to become vulnerable to epidemics and their social and economic consequences. One or more emerging epidemic diseases may easily have started or at least expedited an already nascent crisis (COLLEDGE *et al.* 2019; DOWNEY – HAAS – SHENNAN 2016).

There is no need to blame Yamnaya invaders as bringers of pestilence; we can certainly assume that the plague and other diseases were already present in Europe in the 4<sup>th</sup> millennium BC (RASCOVAN *et al.*

2019), even if we assume a Central Asian origin. There were no natural barriers blocking an exchange of people and pathogens, so the situation cannot be compared to what happened in the New World with the trans-oceanic arrival of the Europeans. It only took an unfortunate change in a microbe's genome and cultural development that served as suitable hotbed. Thanks to their different lifestyle, the steppe pastoralists were just better suited to weather the new threat.

And while the plague caused by *Y. pestis* has caught the most attention so far, there is no reason why it should have been the only or even the main affliction that attacked early settlement centres; below is a selection of Eurasian infectious diseases with the potential to become epidemic:

Table 1. List of infections with epidemic potential in European prehistory

<b>Anthrax (<i>Bacillus anthracis</i>)</b>	
Transmission type: common source	Incubation: 1-60 days
Transmission ways: vectors (livestock, <i>artiodactyla</i> ), airborne, contact	Lethality: 5-25% (skin), 25-50% (intestinal), 30-60% (respiratory)
Seasonality: no	Acquired Immunity: none to limited
Attack Rate: very high (>70%)	Pathogen Survival: extremely long
<b>Diphtheria (<i>Corynebacterium diphtheriae</i>)</b>	
Transmission type: propagated, common source (animals)	Incubation: 2-5 days
Transmission ways: contact	Lethality: 5-10%
Seasonality: autumn, winter	Acquired Immunity: ?
Attack Rate: low (10-20%)	Pathogen Survival: medium
<b>Dysentery (<i>Entamoeba histolytica</i>, <i>Shigella</i> sp.)</b>	
Transmission type: propagated, common source (animals)	Incubation: 2-5 days
Transmission ways: contact	Lethality: 5-10%
Seasonality: autumn, winter	Acquired Immunity: ?
Attack Rate: low (10-20%)	Pathogen Survival: medium
<b>Influenza (<i>Influenzavirus A</i>, <i>B</i>, <i>C</i>)</b>	
Transmission type: propagated	Incubation: 1-8 days
Transmission ways: airborne, contact	Lethality: <1% (seasonal), up to 50% (pandemic)
Seasonality: winter and spring	Acquired Immunity: long (but specific)
Attack Rate: high (50-60%)	Pathogen Survival: very short
<b>Malaria (<i>Plasmodium viva</i>, <i>P. ovale</i>, <i>P. falcipare</i>)</b>	
Transmission type: common source	Incubation: 9-21 days
Transmission ways: vectors ( <i>arthropoda</i> )	Lethality: <1%
Seasonality: summer	Acquired Immunity: none, but innate resistance (sickle-cell anemia, thalassemia) possible
Attack Rate: high?	Pathogen Survival: medium
<b>Meningococcal diseases (varies; often <i>Meningococcus</i>, <i>Neisseria</i>, <i>Haemophilus</i>)</b>	
Transmission type: propagated, common source (food)	Incubation: 3-10 days
Transmission ways: airborne, contact	Lethality: 10-50%
Seasonality: autumn, winter	Acquired Immunity: none
Attack Rate: very low (<1%)	Pathogen Survival: medium

<b>Plague (<i>Yersinia pestis</i>)</b>	
<i>Transmission type</i> : common source and propagated	<i>Incubation</i> : few hours (pneumonic) to 7 days (bubonic and septicemic)
<i>Transmission ways</i> : vectors (rodentia, fleas), airborne, contact	<i>Lethality</i> : 40-60% (bubonic), 70-100% (septicemic, pneumonic)
<i>Seasonality</i> : summer	<i>Acquired Immunity</i> : none to limited
<i>Attack Rate</i> : very high (>70%)	<i>Pathogen Survival</i> : long (months)
<b>Smallpox (<i>Orthopoxvirus variolae</i>)</b>	
<i>Transmission type</i> : propagated	<i>Incubation</i> : 1-3 weeks
<i>Transmission ways</i> : airborne, contact	<i>Lethality</i> : <5% ( <i>Variola minor</i> ), 30-50 % ( <i>Variola major</i> )
<i>Seasonality</i> : winter and spring	<i>Acquired Immunity</i> : lifelong
<i>Attack Rate</i> : very high	<i>Pathogen Survival</i> : long
<b>Tetanus (<i>Clostridium tetani</i>)</b>	
<i>Transmission type</i> : common source	<i>Incubation</i> : 3-14 days
<i>Transmission ways</i> : contact	<i>Lethality</i> : 30-90%
<i>Seasonality</i> : spring, summer, autumn	<i>Acquired Immunity</i> : none?
<i>Attack Rate</i> : medium (20-30%)	<i>Pathogen Survival</i> : extremely long
<b>Tuberculosis (<i>Mycobacterium tuberculosis</i>)</b>	
<i>Transmission type</i> : propagated, rarely common source (milk)	<i>Incubation</i> : months to years
<i>Transmission ways</i> : contact, airborne	<i>Lethality</i> : 3-7%
<i>Seasonality</i> : spring, summer, autumn	<i>Acquired Immunity</i> : limited
<i>Attack Rate</i> : low (5-10%)	<i>Pathogen Survival</i> : medium
<b>Typhoid (<i>Salmonella enterica</i>)</b>	
<i>Transmission type</i> : propagated	<i>Incubation</i> : 6-30 days
<i>Transmission ways</i> : contact	<i>Lethality</i> : 5-20%
<i>Seasonality</i> : summer and autumn	<i>Acquired Immunity</i> : short
<i>Attack Rate</i> : high (50%)	<i>Pathogen Survival</i> : very long (asymptomatic carriers)
<b>Typhus (<i>Rickettsia prowazekii</i>)</b>	
<i>Transmission type</i> : common source	<i>Incubation</i> : 10-14 days
<i>Transmission ways</i> : vectors (arthropoda)	<i>Lethality</i> : 10-40%
<i>Seasonality</i> : no	<i>Acquired Immunity</i> : good
<i>Attack Rate</i> : high	<i>Pathogen Survival</i> : long

Of these, anthrax is of special interest; this disease not only has the best potential to become widespread in a pre-modern environment (very high attack rate, long incubation period, medium lethality, infectious for months or years, limited acquired immunity), it also affects farm animals and, therefore, attacks a population's nutritional basis. In modern times, anthrax is considered an occupational hazard of farmers, butchers and leatherworkers, since it is usually contracted by contact with contaminated animal products. The spores of *Bacillus anthracis* can survive in wool or hides for decades, making such animal products very efficient vectors of infection when used as trade goods. A possible clue to the importance of anthrax as a persistent and serious health risk to past European populations may be seen in the high genetic resistance to the anthrax toxin observed in some modern groups from Europe, but not from other parts of the world (MARTCHENKO *et al.* 2012), which may indicate corresponding selective pressure. Also, populations may acquire some individual immunity by natural exposure (INGRAM *et al.*

2010), which would allow them to spread the disease undetected. It is quite possible that this genetic trait was present in early Eurasian steppe pastoralists groups, providing them with a higher basic immune competence against anthrax, providing them an additional survival advantage.

Last but not least, when discussing the possible impact of diseases on human societies, it would be wrong to focus on human diseases alone and to neglect animal diseases. Some of these – like the *rinderpest* or cattle plague – first described in the Kahun Papyrus LV.2 of ca. 1800 BC – caused frequently catastrophic losses of livestock in history (SPINAGE 2003). Depending on the importance of the affected stock animals for a given human group, losses of more than 70% may have caused a fatal food crisis (BARRETT – PASTORET – TAYLOR 2006).

Unfortunately, research into the history of animal diseases is quite limited so far.

On the whole, there are good reasons why epidemic diseases could have contributed to the radical changes observed in the 4<sup>th</sup>/3<sup>rd</sup> millennium BC – probably not in the form of one catastrophic pandemic event of the plague, but rather as a series of limited outbreaks of different infectious diseases with an ever-increasing frequency.

Populations with large settlements and complex structures of economic and social interdependence and exchange would have been especially susceptible to direct and indirect detrimental consequences of an epidemic. A population with a decentralised, independent and autonomous lifestyle with smaller and more isolated settlement cells on the other hand would have been more resilient, until the threat of infection got mitigated by pathogenic and human adaptation – and would have profited most from the post-collapse recovery boom.

## Acknowledgements

This paper was written with the support of the ERC Advanced project 788616: The Yamnaya Impact on Prehistoric Europe (YMPACT).

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# The mythology of Marija Gimbutas

MAXIME BRAMI

## Abstract

*In 2021 we are celebrating the centenary anniversary of the birth of Marija Gimbutas (1921–1994), one of the foremost prehistorians of the 20<sup>th</sup> century. This contribution, which is not intended as a biography but rather a critical examination of her famous Kurgan hypothesis, highlights the symmetry of her model, which relies on symbolic representations: Old Europe / Indo-European Europe, matrifocal / patrifocal, agricultural / pastoral, sedentary / nomadic, tells / kurgans, peaceful / warlike etc. This mythological repertoire became increasingly simple as years passed, until great hordes of Proto-Indo-European-speaking warriors defeated the old Matriarchy. The main aspects of this symbolic system are presented here to highlight some of the dilemmas confronting archaeology today and the study of ‘Yamnaya interactions’. The theories of Gimbutas, it is suggested, are back with a revenge, rekindled by a genetic revolution that is changing how archaeologists view migrations and invasions.*

**Key words:** *Gimbutas, Kurgan hypothesis, Indo-Europeans, prehistory, genetics*

## Introduction

This short preamble gives an idea of Marija Gimbutas’s life – her experience of war, displacement and alienation. Invasion was not an abstract concept to her (MILISAUSKAS 2000). Gimbutas came from Lithuania, a small Baltic nation in Eastern Europe, which only regained its independence in 1990, after successive occupation by the Poles, the Germans and the Russians. Being from a well-off family of medical doctors and nationalist revolutionaries, Gimbutas was a good candidate for the *gulag* (MARLER 1995). Fearing the advance of the Soviet Army in 1944, she fled with her husband and daughter to Austria, then moved to the west of Germany, where she lived the final months of the war in desperate conditions. Incredibly productive considering the circumstances, Marija Gimbutas defended her PhD in 1946 at the University of Tübingen, majoring in archaeology, with emphases in prehistory, ethnology and the history of religions (MARLER 1995, 5).

Unable to return to Lithuania after the war, the Gimbutas family emigrated to the United States in 1949. Marija Gimbutas’s knowledge of Russian and other Slavic languages, in addition to German and, no doubt, French, ensured that she rapidly became the go-to person for archaeology beyond the Iron Curtain. Only Gordon Childe had achieved such a status in the West. His suicide in 1957 left a place vacant. It was during this period that Gimbutas articulated her now-famous Kurgan hypothesis, deriving the Indo-Europeans from the Pontic-Caspian steppes (GIMBUTAS 1956). Gimbutas first served as research assistant and lecturer at Harvard University, then became Professor of European Archaeology at the University of California, Los Angeles, in 1963. She was an exchange Professor with the USSR in 1969 and returned to Lithuania on a Fulbright Fellowship in 1981 (MARLER 1995, 8).

Long belittled by the archaeological establishment, which had turned against migrationist and invasionist explanations of change in the wake of the radiocarbon revolution of the 1960s-1970s (RENFREW 1973), the theories of Gimbutas regarding the Kurgan invasions are enjoying a revival today.

The tipping point was 2015, when two ancient DNA studies independently confirmed that large-scale migration from the Pontic-Caspian steppes had contributed to a massive population turnover in Late Copper/Early Bronze Age Europe (ALLENTOFT *et al.* 2015; HAAK *et al.* 2015). Both studies identified the newcomers as a possible source for Indo-European languages – allegedly putting an end to a long controversy, largely pushed to the margins of archaeological debate until recently. Steppe-related ancestry has now been identified as far west as the British Isles, within the so-called Beaker complex (OLALDE *et al.* 2018). In other words, the palaeogenomic revolution is spearheading a reappraisal (if not a reintroduction) of Gimbutas's theories, which provide a framework to conceptualize steppe migrations in the 3<sup>rd</sup> millennium BC. In perhaps the clearest sign of how genetics is rewriting archaeology today, the main challenger of the 'steppe hypothesis', Colin Renfrew, recently declared Gimbutas's Kurgan hypothesis "magnificently vindicated" (RENFREW 2017).

Yet there are still considerable uncertainties regarding Gimbutas's broader intellectual project. What assumptions lay behind her vision of an Old European civilization destroyed by Indo-European invasions? And how did she arrive at the 'steppe hypothesis'? Marija Gimbutas was a leading advocate of what she called "archaeomythology", an attempt to flesh out visions of the deep past, to make them tangible – by all means avoiding heavy-handed concepts and anything remotely smacking of intellectualism (GIMBUTAS 1989 [2001], xviii). Comparative philology, folklore, religious history and mythology were as essential to her system as archaeology. Starting off as a relatively old-school culture-historian, influenced by Childe and others, Gimbutas's great flair was to repackage the Indo-European invasion story for the flower power generation, by turning spotlight on the matrifocal structure of the Old European civilization and rewriting the chronology of steppe invasions. That tale of two beginnings, Old European and Indo-European, is what palaeogenetics is rediscovering today, albeit with nuances, but still somewhat controversially. Gimbutas is posthumously winning the battle to set the research agenda.

This chapter deals first with the ancient stratification of Europe and Gimbutas's discovery of the Old European and Indo-European substrata. A brief overview of the historiography of the 'steppe hypothesis' ensues, to show how Gimbutas appropriated and expanded a famous archaeological and linguistic hypothesis. The final section addresses the mythological aspect of her work and the simplification inherent to any prehistoric synthesis. In the end, Gimbutas's model is neither right nor wrong – providing a framework that is too general and intuitive to serve as a solid foundation for modern science.

## 1. The Old European and Indo-European substrata

Where do the roots of modern Europe lie? And what makes Europe so distinctive? Marija Gimbutas thought that she had found the answer. A prehistoric civilisation very much resembling the Danubian Neolithic (Vinča, Hamangia etc.) had supposedly flourished in Europe before the arrival of Indo-European tribes, developing a complex township system, religious structures, metallurgy and even a script (GIMBUTAS 1973). What made this civilisation so distinctive is that it was matrifocal in outlook and indigenous to Danubian Europe, unlike Indo-European culture which was patrifocal, and a foreign importation. Old Europe, she wrote, "was not a provincial reflection of Near Eastern developments but a civilization fully equal to those of Mesopotamia and Anatolia during the relevant time span" (GIMBUTAS 1973, 1–2). Like a fortress under siege, this pristine 'higher culture' or civilisation had gradually crumbled under the repeated assaults of Indo-European tribes.

But – and it is an important 'but' – the Old European civilisation had not been completely suppressed. "The Kurgan people did not exterminate the endemic population" (GIMBUTAS 1963a, 827). Its symbols and values had continued to infuse succeeding cultures, giving a genuine European flavour to Eastern-

oriented phenomena, such as the Indo-European, Graeco-Roman and Judeo-Christian worlds. Gimbutas saw distant echoes of that Old European tradition in the ancient Greek worship of the goddess Athena, who was now surrounded by a male pantheon and dressed in the military attire of Indo-European war-gods (GIMBUTAS 1989 [2001]). For her, Minoan Crete was perhaps the last bastion of the Old European world – a haven of peace and prosperity in a continent ravaged by war. The end of the gynocentric world had spelled a long series of crimes – ranging in Gimbutas’s opinion from “the witch hunt of the 15<sup>th</sup>–18<sup>th</sup> centuries”, described as the “most satanic event in European history in the name of Christ”, to “the torture and murder of fifty million women, children, and men [in Stalin’s East Europe]” at the peak of “androcratic rule” (GIMBUTAS 1989 [2001], 319).

It is hard to disentangle Marija Gimbutas’s Indo-European vision from her own personal experience of a world turned upside down by major political ideologies, especially Stalinism (Gimbutas barely ever mentioned ‘National-Socialism’). The Indo-European invaders, who came to destroy Old Europe, also hailed from Russia. Did Gimbutas see a pattern of repetition here – or try to establish one? Would there be steppe invasions without the threat of Soviet Communism? ‘Barbarians at the gate’ and ‘fortress Europe’ are common *leitmotifs* of the European tradition. The wider context of Cold War politics at a time when Europe was divided and disputed is important if we are to understand Gimbutas’s search for the origins of Western Civilization. Gimbutas wrote at the height of the Cold War from an American university. Her theories were not initially accepted in Russia. Gimbutas’s archaeological fieldwork in Greece (sites of Achilleion and Sitagroi) overlapped with the Regime of the Colonels (1967–1974), backed by America to put a halt to Soviet encroachment in the Balkans. While the extent of her anti-Communist activities is not known, her personal acquaintance with Roger Pearson, the American representative in the World Anti-Communist League and founding member of the *Journal of Indo-European Studies* (1973), suggests some intersection between her archaeological work and political activities (DEMOULE 2014). Describing Gimbutas as “[purveyor] of ideologically motivated interpretations of the past” (ANTHONY 1996, 92) may not fully capture her world view, which was also shaped by a strong spiritual link with her home nation. Lithuania, which is so attached to its Christian roots today, was one of the last Christianised nations in Europe according to historical sources (MARLER 1995, 3). The cultural memory of paganism is said to be strong in the Baltic States, which were a target of crusades by German-speaking Teutonic Knights in the 13<sup>th</sup> century AD. Even the destruction wrought by two World Wars and foreign occupations could not completely erase ancestral traditions in this buffer region, locked between Russian, German and Scandinavian influence spheres. Isolated Estonian matriarchal communities living on remote islands are still featured in recent documentaries – paradoxically rekindled by Stalinism and the extraordinary killing of men in the 20<sup>th</sup> century (GJELSTAD 2020).

The linguistic landscape of the Baltic States is another important element to understand Gimbutas. Unlike Estonian, which belongs to the Uralic language family (like Finnish, Hungarian, and various smaller dialects spoken in the Russian Federation), Lithuanian is an Indo-European language. It is considered to be one of the oldest surviving Indo-European dialects, with connection to the Indian Sanskrit (MEILLET 1928 [2017], 51). A popular though short-lived theory in the 1870s even imagined Lithuania to be the homeland of the Indo-Europeans (MALLORY 1973, 31). Marija Gimbutas wrote on the ethnogenesis of the Balts whom she saw as divided into two zones of influence from the Bronze Age: the western Balts falling under the spell of the metallurgical centres of Central Europe, whereas the eastern Balts remained archaic (GIMBUTAS 1963b).

For Gimbutas, as for so many other prehistorians, like Childe, who also wrestled with the complexities of Cold War Europe, the past became deeply personal and highly political. Gimbutas saw the past like a big chess game of archaeological migrations and invasions. Modern divisions were thought to reflect the complex collision and pile-up of ancient civilisations. Gimbutas’s world view was eminently

particularistic: the ‘Balts’, the ‘Slavs’, the ‘Germans’, the ‘Indo-Europeans’ were described like the lost tribes of Israel in the Bible – as essentialist entities with separate historical roots and trajectories (GIMBUTAS 1963b; 1971). Bearers of these cultures were seen as having different physical attributes. Though *völkisch* (generally speaking ‘ethno-nationalist’) might be too strong of a word to characterise Gimbutas’s approach, it does resemble 19<sup>th</sup> and early 20<sup>th</sup> century attempts to explain history in terms of deep-rooted mystical and biological conflicts; like Thomas MANN, in his disowned (1918) book *Die Betrachtungen eines Unpolitischen*, who tried to portray the war between France and Germany as the latest incarnation of the fight by the Latin world to civilise Germanic culture.

## 2. The steppe hypothesis

Gimbutas came to archaeology through folklore and Indo-European comparative philology (see GIMBUTAS 1952). The irruption of linguistics in prehistoric studies may seem surprising given the absence of written records, but follows a tradition worth briefly retracing here. The Indo-European quest has been described as the search for the origins of Western civilisation (MALLORY 1973, 22). How do Gimbutas’s theories fit within that tradition? A detailed historiography of the steppe hypothesis is beyond the scope of this chapter (see HÄUSLER 1996; DEMOULE 2016). The influence of Gordon Childe and, to a lesser extent, Gustav Kossinna, is highlighted here to show how Gimbutas appropriated and expanded an old linguistic theory on the origins of the Indo-Europeans. Gimbutas’s ‘Kurgan’ hypothesis, like Childe’s, rests on the linguistic assumption that Proto-Indo-Europeans came from the Pontic and Volga steppes of Southern Russia, bringing war and devastation to the European continent (RENFREW 1987, 39). The invaders are like mirror images of Kossinna’s *Indogermanen*, equally violent but alien to Western civilisation and abhorred rather than embraced.

The genetic relationship of Indo-European languages has been explained since the 18<sup>th</sup> century by descent from a common ancestor language, known as Proto-Indo-European (historically *Die Indogermanische Ursprache*). This language, which is thought to have been spoken in pre-Homeric times, is only known theoretically through the so-called ‘comparative method’ of historical *linguistics*. Lists of cognate terms (words that have a common etymological origin), grammatical and phonological patterns are compared across a range of historically attested languages, both modern and ancient, to infer a prehistoric dialect that has never been written down (MEILLET 1903 [2010]). The underlying assumption that languages evolve like biological species, from a common tree or *Stammbaum*, is still vigorously debated (DEMOULE 2014).

Gimbutas’s quest to discover the Indo-European *Urheimat* – in other words, the primitive homeland of the Proto-Indo-European speakers – must be seen in the light of a long archaeological tradition, extending back to Gustav Kossinna (1858–1931). Sometimes described as the “first theoretical archaeologist” (KRISTIANSEN 2014, 15) – a controversial title for a Raskolnikov figure who drowned in grand theory and could not tell truth from ideology – Kossinna is mainly remembered for his attempts to use archaeological remains to verify Germany’s Aryan claims (before Hitler and the Nazis). The questions of who we are and where we come from give rise to a deep spiritual quest for the national character of Germany in Kossinna’s writings. Believing Indo-Europeans (i.e. *die Indogermanen*) to be intrinsically Germans, the Prussian librarian constructed a national past, in which primitive Germans arose in the North-European forest and gradually reclaimed the European continent through invasions and annexations (KOSSINNA 1896; 1902). The archaeological cultures of the 3<sup>rd</sup> millennium BC, such as the Globular Amphora (*Kugel-Amphoren*) and the Corded Ware (*Schnur-Keramik*) cultures, still bear



the mark of Kossinna's branding: notice how they follow the extent of the old Bismarck Reich and the Germanic encroachment into the Baltic, which goes back to religious conflicts in medieval times.

Kossinna's theories, based almost exclusively on descriptions of ceramic and physical types, were first challenged by German philologists at the end of the 19<sup>th</sup> century. Pitched as an alternative to Kossinna's Germanic homeland, the canonical 'steppe hypothesis' was outlined in detail by Otto Schrader (1855–1912). Given how little archaeological evidence he had at his disposal, Schrader used the comparative etymology of Indo-European languages (the presence or absence of specific Indo-European words) to argue that the Proto-Indo-Europeans lived in the steppes; that their social organisation was patriarchal; that they knew the wagon and the wheel (but perhaps not the horse?); and that their economy was pastoral (SCHRADER 1911). Schrader went as far as to suggest that the Indo-Europeans invented theft (*Dieb*) and that cattle raiding was an essential feature of Indo-European culture. Crucially, Schrader inverted the direction of travel of Indo-European languages and gave precedence to the Slavic east (a much later linguistic branch, projected here into the distant past).

The British archaeological tradition, led out by people like John Myres and Harold Peake, was quick to take over the 'steppe hypothesis' – firstly because it conformed to the old philological tenet that Indo-European languages came from Asia; and secondly because it provided a credible alternative to Kossinna's Germanic homeland theory in the struggle for the ideological control of European prehistory (DEMOULE 2014). Vere Gordon Childe (1892–1957) remains the most important name associated with the 'steppe hypothesis' during the interwar period. His 1926 book *The Aryans* decided, after much dithering, that the first Indo-Europeans were the 'ochre-grave people' (today's *Yamnayas*) of the Southern Russian steppes and western Black Sea region (CHILDE 1926). If their dialect was described as somehow the hallmark of a superior culture, the Indo-Europeans were portrayed – very much like Gimbutas's 'Kurgan people' – as a violent race of civilisation-wreckers.

Initially reluctant to equate Kurgan people with Indo-Europeans in her monograph *The Prehistory of Eastern Europe* (GIMBUTAS 1956), Marija Gimbutas came to see the 'Kurgan pit-grave culture' of Ukraine and South Russia, beyond the Dniepr River, as responsible for the Indo-Europeanization of Europe. "The existence of Indo-European homelands advocated by linguists for more than 100 years is no longer an abstraction", she wrote, "results achieved by archaeological research make it possible to visualize the homelands, at a certain time and place, as a historical reality" (GIMBUTAS 1970, 155).

'Kurgans' are earth mounds connected with the ochre-grave people in the east. The term 'Kurgan' is used as a general term by Gimbutas to describe a set of expanding eastern elements, including corded pottery, battle-axes and ochre-graves (GIMBUTAS 1963a, 825). While never acknowledging Childe's *Aryans* – perhaps by fear that the loaded term 'Aryan' becomes somehow attached to her own work – Gimbutas appropriated the old steppic hypothesis devised by the linguists (*Fig. 1*). Many of Childe's articles, including lesser-known ones, are listed in Gimbutas's 1956 monograph. For physical description of the different human types, Gimbutas followed Carleton Coon, whose *Races of Europe* claimed to have benefitted from personal insights by "Professor V. Gordon Childe" (COON 1939, ix). The term 'race' rarely appears in Gimbutas's writings, but references to "Crô-Magnon C type", "tall-statured, massive Mediterranean type", "Asiatics without Semitic features", "dolichocephaly", "blend of local and immigrant components", etc. leave little doubt that Marija Gimbutas's understanding of prehistory was biologicistic and, to some extent, deterministic (GIMBUTAS 1956, 56, 120, 152; 1970, 189). Such notions were already largely discredited in the Anglo-American academic world by the time Gimbutas wrote her syntheses (ASHLEY MONTAGU 1965; BARKAN 1992).

The Kurgans were modelled based on the Scythians and described as mounted archers of no fixed abode (GIMBUTAS 1963a, 833; 1970, 160). Gimbutas imagined three main waves of incursion into Old Europe, spanning from the 5<sup>th</sup> to the 3<sup>rd</sup> millennium BC: (1) Early Kurgan (or Kurgan I), characterised



Fig. 1. Expansion of the Kurgan (Indo-European) people (reproduced after GIMBUTAS 1963a: fig. 2 with permission from the American Anthropological Association). Key A. European cultures in the third millennium before the Kurgan expansion: 1. Western Anatolia; 2. Cilician Early Bronze Age; 3. Central Anatolian Early Bronze Age; 4. East Anatolian Early Bronze Age, related to the Caucasian; 5. North Pontic Neolithic and Chalcolithic; 6. Tripolye (Tripolye-Cucuteni-Erősd); 7. Gumelnița; 8. Early Macedonian Bronze Age; 9. Early Helladic I and II; 10. Early Minoan; 11. Bubanj II-Salcuta; 12. Late Vinča; 13. Butmir; 14. Lengyel survivals; 15. Tisza (Tiszapolgár-Bodrogkeresztúr) and Baden; 16. Funnel-necked Beaker (TRB, First Northern)

by the first encounter with the Cucuteni-Trypillia agriculturalists of Eastern Europe; (2) Middle Kurgan (Kurgan II and III), coinciding with the apex of the Balkano-Danubian conquest and the destruction of the Old European civilisation; and (3) Late Kurgan (Kurgan IV), when almost all of Europe and parts of the Near East were conquered by “Indo-European kings” (GIMBUTAS 1970, 177–181). The ‘shaft-graves’ of Alaca Höyük in North-Central Anatolia were depicted as graves of Kurgan rulers, and so were the Royal Tombs of Ur in southern Iraq and the catacomb-graves of Jericho in Palestine; even mighty Egypt was not spared the Kurgan plague (GIMBUTAS 1970, 181, 187, 189).

The Globular Amphora culture was described as the north-western continuation of the Kurgan phenomenon beyond the steppe zone, in what is now Germany and Denmark. The cultural ‘package’



associated with this intrusion included the following elements: (a) burial rites (round barrows and house-like mortuary structures); (b) animal sacrifice and red ochre in graves; (c) domestic horses; (d) small rectangular houses; (e) fortified hill-top sites; and (f) corded decoration (GIMBUTAS 1956, 168). Gimbutas evoked the greedy nature of the Kurgan “vagabonds”, who lived like the Thracians “by war and plunder” to explain their migration to the North and the Baltic region – probably lured by the amber trade (GIMBUTAS 1956, 169; 1970, 190).

What follows from the preceding is that the ‘Kurgan hypothesis’ is a linguistic construction that was verified through archaeology. The shadow of Gordon Childe (and no doubt Kossinna) looms large over Gimbutas’s early writings. Childe’s warning to abandon the Indo-European *Urheimat* quest, described as “unprofitabl[e]” and largely “failed” in his ‘Retrospect’ article, published posthumously, apparently went unheeded (CHILDE 1958). Gimbutas became the figurehead of post-World War II Indo-European invasionism. Her ‘steppe hypothesis’ ran counter-current to the trends of archaeology in the 1960s-1970s, marked by the collapse of the traditional culture-historical framework under the combined assault of the radiocarbon revolution and the New Archaeology (RENFREW 1973). Gimbutas’s theories today appear backward-looking in some respects, for instance with its obsession for ‘physical types’ and ‘ethnogenesis’, or formation of ethnic groups – more *avant-garde* in others, preparing the ground for the return of historical syntheses (RENFREW 1987) and structural analyses in the 1980s-1990s, based on ‘binary operators’ such as the *domus* and the *agrios* of Ian Hodder’s *Domestication of Europe* (HODDER 1990) or the ‘goddess’ and the ‘bull’ of Jacques Cauvin’s *The Birth of the Gods and the Origins of Agriculture* (RENFREW 1987; HODDER 1990; CAUVIN 1994).

### 3. The mythology of Gimbutas

Gimbutas described her work as ‘archaeomythological’. What role do myths play in her reconstructions of the deep past? The ‘reality’ of the Indo-Europeans is revealed in her writings through vivid images – not stultifying concepts. Idyllic depictions of Old Europe alternate with gloomy visions of Indo-European hell. The dialectical structure of Gimbutas’s ‘Kurgan’ model, based on simple black-and-white realities, resembles 20<sup>th</sup> century ‘social mythologies’ theorised by Georges Sorel and by later adherents of Structuralism. That filiation is highlighted here. Simplicity of vision is an instrument to achieve intensity and appeal to the heart.

Most people form their views of the past on the basis of folk-tales and long memories that may or may not be accurate. Myths play the same fundamental role in the West as they do in traditional societies; stories become ‘real’ by the force of repetition (ELIADE 1963). All history is to some extent mythic repetition. If it is true that the Western tradition has secularised the myth of the Creation and the Fall through prehistory – the science of the deep past (ROWLEY-CONWY 2007) – it has never done away with questions of origins and identity, which are teleological (concerned with the outcome) and highly charged emotionally. Marija Gimbutas was aware of prehistory’s tendency to myth-making and sought to exploit the rich mythological past of Europe to rewrite the present.

An analysis of the function of myths in Gimbutas’s work would not be complete without returning to revolutionary socialist Georges Sorel’s *Reflections on Violence*, one of the favourite books of the European identitarian Right, described by Thomas Mann as a key to the first half of the 20<sup>th</sup> century (MANN 1947; see GISSELBRECHT 1988). Published in 1908, this book contains a very original description of the role of myths in advanced industrial societies. Sorel believed that the collapse of the democratic system in Europe, already perceptible before the First World War, would spell the return of social myths – simple collective representations at the heart of major ideological systems (SOREL 1910). Myth and

reality are not antonymous in Sorel’s system; on the contrary. The myth of the Crusade is what makes Christianity ‘real’ by opposing Christians and heathens in the Holy Land. Polarised views of the past are seen by Sorel as essential to the process of myth-making – not coherence or truth. The purpose of myths is to shape action in the present (SOREL 1910, 167).

The two major political ideologies of the interwar period, Communism and National Socialism, relied on simple systems of representation – class struggle and a fabricated race struggle – characterised by alternative myths of origins and progress. Their visions of the deep past were largely irreconcilable. Think of Germany’s Aryan pasts, exploited by the Nazis, or primitive communism. As Sorel explained in his book, the distinction between ‘bourgeois’ and ‘proletarians’, which is intrinsic to the Marxian conception of history, was too simple to capture all the shades of economic condition in post-1789 France. The myth of the general strike (in other words violent action) is what made this division real by suddenly opposing two social classes in the streets (SOREL 1910, 33; 155). When everything else fails – Sorel believed – the masses are moved by powerful visions or world views (*Weltanschauungen*).

Marija Gimbutas’s ‘Kurgan theory’ proceeds from the same logic. “[M]ythology reflects an ideological structure”, Gimbutas writes in 1989 (GIMBUTAS 1989 [2001], xviii). Consider the division between Old Europe and Indo-European Europe; it is so simple as being beyond argument. *Table 1* lists some of the adjectives associated with the two cultures described by Gimbutas:

*Table 1. Characteristics of Old European cultures and Indo-Europeans ones according to Marija Gimbutas*

Old Europe	Indo-European Europe
Matrifocal	Patrifocal
Sedentary	Nomadic
Agricultural	Pastoral
Peaceful	Warlike
Civilization	Tribes
Tells	Kurgans

Simple binary oppositions underlie Gimbutas’s vision of the prehistoric past. If Gimbutas’s early research is set within a fairly robust culture-historical tradition (see GIMBUTAS 1956), that framework is rapidly abandoned to produce a Manichaean tale of two beginnings that could be summarised in a few words: matrifocal Europe and the coming of the warriors. The style of writing is narrative. Not a single question is asked. The agenda is never discussed openly. One is left to speculate about Gimbutas’s intent. Her method is to cast light and darkness on the same symbolic system to speak to different audiences – contributing or inspiring initiatives as diametrically opposed as *Journal of Indo-European Studies* (1973) and *Journal of Archaeomythology* (2005). The common background, as already explained, is historical particularism, challenging the cultural (and in some cases biological) unity of humankind, which is seen as a matter of perspective, rather than as a given fact.

**Outlook: prisoners of a mythology of our own?**

Marija Gimbutas’s vision of the deep past as a collision of beginnings is never far from ideology. Her ‘Kurgan hypothesis’ is not a concept but a vision or a certain aesthetics. As was seen in this chapter the idea of steppic invasions, associated with ochre-grave people in the Bronze Age, belongs to Gordon

CHILDE's *Aryans* (1926) and the Indo-European linguistic tradition. Gimbutas's contribution was to bring this vision back to life through rich symbolic representations – to provide a myth of origin for Western Civilisation that captures the fears and imagination of contemporary Europeans living under the threat (or the yoke) of Communism. Marija Gimbutas lived to see her home nation regain independence and the reunification of Europe. That construction is still ongoing.

Why archaeology and genetics are rediscovering the theories of Gimbutas today is an interesting question. Part of the answer lies in the way modern science has been recycling old categories to examine the deep past – including archaeological cultures defined by Kossinna and others, who worked within national traditions and imagined modern nations to be descendants of prehistoric tribes attached to a particular landscape (HEYD 2017). The return of simple biologicistic interpretations of the deep past, conflating material culture, biology and linguistics, should worry us all. Any revival of interest in a long abandoned theory in archaeology needs to be subjected to rigorous examination in the 21<sup>st</sup> century, as archaeological theory is now very different from when Gimbutas wrote.

### Acknowledgements

I thank Volker Heyd for his invitation to the 'Yamnaya interactions' workshop and his suggestion to contribute a paper to the proceedings. The research was largely conducted in Helsinki, with the support of the ERC Advanced project 788616: The Yamnaya Impact on Prehistoric Europe (YMPACT). The list of people who were kind enough to share some insights into Gimbutas's life and Indo-European matters is too long to name in full. I remain sole responsible for the opinion expressed. This research was additionally supported by a Marie Skłodowska-Curie Individual Fellowship [n° 793893].

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# Still making waves. Marija Gimbutas in current archaeological debates

BIANCA PREDA-BĂLĂNICĂ

## Abstract

*This paper aims to take a look at the migration waves theory of Marija Gimbutas from the perspective of latest research in archaeology, but also including insights offered by aDNA studies. In her famous model, Maria Gimbutas stated that three waves of migration from the steppes into Southeastern Europe took place in three different periods: the second half of the 5<sup>th</sup> millennium BC, the last centuries of the 4<sup>th</sup> millennium BC and the first centuries of the 3<sup>rd</sup> millennium BC. In order to assess if her model finds support in the archaeological record I will provide an overview of the discoveries in the steppe-like regions of Southeastern Europe during the time corresponding to the supposed waves of migration. For each phase I will also advance other possible interpretations that could account for this archaeological record, involving different types of mobility/migration or cultural transmission processes.*

**Key words:** Marija Gimbutas, migration theory, kurgans, burials, steppe

## Introduction

The year 2021 marks 100 years since the birth of one of the most intriguing and polarising archaeologists of the last century: Marija Gimbutas. She left a huge legacy behind, comprised of several monumental books and hundreds of articles, and many aspects of her research sparked lively discussions in the academia: from her views of the Goddess-centered Neolithic societies of *Old Europe*, fueling a controversial feminist movement, to her methodology of archaeomithology, to her steppe hypothesis of the Indo-European homeland and the Indo-Europeanization process.<sup>1</sup> She considered the latter as the result of three waves of migration that could be identified archaeologically, coming out of the steppes and into Southeastern Europe between the 5<sup>th</sup> and 3<sup>rd</sup> millennia BC, and completely restructuring the cultural foundations of Europe.

The saga of her kurgan hypothesis was and still is deeply influenced by more than a century long history in which archaeology fell in and out with migration periodically. During the 19<sup>th</sup> and more than half of the 20<sup>th</sup> century, migration was one of the most commonly used tools to explain changes in material culture in the culture-historical paradigm (TRIGGER 2006, 217–223), only to be completely abandoned starting with the 60<sup>'ies</sup>, with the emergence of a New Archaeology that was criticising culture-history and rejecting migrationism (HAKENBECK 2008; BURMEISTER 2017a). It was exactly in this untimely context that Marija Gimbutas formulated her theory of the Kurgan peoples migrating and destroying the cultures of *Old Europe*. Unsurprisingly, her ideas were not well received by western archaeologists (RENFREW 1987; HÄUSLER 1996). However, they did find support among eastern European scholars (DERGACHEV 2000). The matter remained unsettled for decades.

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<sup>1</sup> For reactions and controversies surrounding her work see for example ANTHONY 1996; KELLER 1997; HAYDEN 1998; MARLER 1999.

Recently, advances in stable isotope analyses and especially in aDNA brought about the return of migration as one of the main research interests in archaeology. In 2015, two articles based on aDNA analyses stated that a massive migration from the steppe into Southeastern Europe took place at the beginning of the 3<sup>rd</sup> millennium BC (HAAK *et al.* 2015; ALLENTOF *et al.* 2015). Other papers followed the topic in the next years (OLALDE *et al.* 2018; MATHIESON *et al.* 2018). The new interpretations brought back migration with a familiar cultural-historical accent, perceived as an “event taking place over a relatively short time, involving large-scale population displacement, long-distance journeys and a profound cultural impact on the receiving areas” (HAKENBECK 2008, 13). Furthermore, images of invasions led by violent men riding their way into the hearth of Europe, killing and replacing local populations were revived.<sup>2</sup>

The lifetime work of Marija Gimbutas is once again under the spotlight and, given that publications authored by prestigious teams of geneticists and archaeologists seem to confirm parts of her theory, it is only fair to wonder, as David Anthony recently did: was she right in the end (ANTHONY 2021)?<sup>3</sup> Examining the results of latest research in Southeastern Europe in the light of her model is a timely endeavour. Archaeological excavations of burial mounds, carried out in Romania, Bulgaria, Serbia, and Hungary in the past ten years have significantly changed our understanding of the steppe impact to the region, while aDNA analyses started to shed light on the biological ancestry of individuals. Therefore, in this paper, I will analyse the waves of migration theory of Marija Gimbutas focusing on its archaeological implications, and without touching upon the Indo-European problem, which I consider beyond the scope of this study (see BRAMI 2021, this volume). Firstly, I will present the model and how it crystallised in publications that spanned several decades. Following, I will provide an overview of the steppe related discoveries in Southeastern Europe during the time of the supposed waves of migration and assess if the archaeological and available genetic evidence supports the model. For each phase I will also explore alternative interpretations that could account for the presented archaeological record, having in mind more theoretical approaches to migration as a social process (ANTHONY 1990; 1997; BURMEISTER 2000).

## I. The three waves of migration theory

Marija Gimbutas developed and crystallised her ideas in several publications (GIMBUTAS 1977; 1979; 1991; 1993)<sup>4</sup> in which she presented extensively the invasions of “patriarchal, ranked and warlike” (1979, 114) horse riders<sup>5</sup> from the Eurasian steppe bringing the dissolution of the “matrilinear, egalitarian, peaceful” Old European civilisation (1979, 114). She put them under the umbrella of the “Kurgan tradition”, which she considered as a blanket term for the culture of the seminomadic patriarchal pastoralists who built round funeral mounds between the 5<sup>th</sup> and 3<sup>rd</sup> millennia BC (GIMBUTAS 1979, 113; 1993, 206).<sup>6</sup> She

<sup>2</sup> See BARRAS 2019 including interpretations of aDNA research by renowned scholars.

<sup>3</sup> In 2017 Colin Renfrew, the main opponent of her theories, gave a lecture called *Marija Rediviva: DNA and Indo-European Origins*, at The Oriental Institute Lecture Series: Marija Gimbutas Memorial Lecture. November 8, 2017. <https://www.youtube.com/watch?v=pmv3J55bdZc> accessed at 15.06.2020.

<sup>4</sup> The elaboration of the three waves of migration theory in the work of Marija Gimbutas, and the manner in which she adjusted the absolute and relative chronology of her model according to the development of <sup>14</sup>C dating and discovery of new sites is a research topic in itself, but it exceeds the aims of this paper. Therefore, here I present the latest version published in the ‘90s in order to compare it with the current archaeological record.

<sup>5</sup> Although the theory of horseback riding starting with the 4<sup>th</sup> millennium BC has its supporters (ANTHONY 2007, 221), the origins of horse domestication and the moment when they started being used for riding are still under debate (GAUNITZ *et al.* 2018; FAGES *et al.* 2019; TAYLOR *et al.* 2020; GUIMARAES *et al.* 2020; TAYLOR – BARRÓN-ORTIZ 2021).

<sup>6</sup> For a critique of the term “Kurgan tradition” see ANTHONY 1986.



postulated that there were three chronologically distinct waves of migration of these “Kurgan people” into Southeastern Europe.

**The first wave** (Fig. 1.1) was connected with the spread of populations from the steppe region of the Lower Volga and Lower Urals to the west, around the middle of the 5<sup>th</sup> millennium BC, mostly evidenced in burials. In the Lower Dnieper basin this new type of burials were labelled as Srednij Stog II<sup>7</sup>. They were characterised by the supine position of the deceased with flexed or extended legs, ochre straying, the presence of flint daggers or spears and beakers with pointed bases, pots were tempered with crushed shell, stylised horse heads carved in stone were placed as grave goods. From there they infiltrated the territory west of the Black Sea around 4400–4300 BC. The supposed impact differed from one region to another, as the Cucuteni civilisation survived the “First Wave”, whereas the event proved catastrophic for the Varna, Karanovo (Gumelnița), Vinča, and Lengyel communities, which were dislocated as a chain reaction. The appearance of the Cernavoda I culture, dated to the first half of the 4<sup>th</sup> millennium BC and considered a “Kurganish complex”, is seen as a consequence of this first wave.

**The second wave** (Fig. 4.1) was dated in the second half of the 4<sup>th</sup> millennium BC and the invaders originated from the north-Pontic/north-Caucasus region. It supposedly had a deep impact on the Cucuteni culture that had survived the first wave, but succumbed and was transformed by the second. The occurrence of kurgans in the plains of Romania and Bulgaria is considered a consequence of this wave. At the same time the re-occupation of tell settlements such as Ezero, Nova Zagora or Sitgaroi is seen as a proof of the Kurgan domination of Old Europe, culturally unifying East-Central Europe, Macedonia and even western Anatolia. Gimbutas found resemblances between the settlements and burial practices of the Baden culture and this Kurgan horizon and saw a *Kurganization process* at work. On the contrary, she considered the Coțofeni culture as a vestige of the Old European tradition, as sedentary agriculturalists living in solidly built houses, using copper tools and still producing burnished red and white painted ceramics.

**The third wave** (Fig. 6.1) was dated between 3000–2800 BC and the populations came from the Volga steppes. The Yamnaya wave is described as a “massive infiltration which caused drastic changes” (GIMBUTAS 1991, 384; 1993, 213) in the wider Balkan region. In Gimbutas’ view, Yamnaya populations, whose presence in the region is evidenced by hundreds of burials, reached east-central Europe as far as eastern Hungary and northern Yugoslavia causing Baden-Vučedol communities to shift to north-west and south, to Bohemia and central Germany, the Adriatic coast, northern Italy. She stated that the Kurgans arriving in Greece at the beginning of the 3<sup>rd</sup> millennium BC were descendants of these Baden-Vucedol populations, which were a product of the Indo-Europeanization process of the second wave (GIMBUTAS 1993, 215). She saw the Bell Beaker cultural elements as deriving from Vučedol and Yamnaya traditions. On the contrary, she did not consider the emergence of the Corded Ware as a consequence of steppe intrusions, but she was rather inclined to see it as a later phase of the Globular Amphora complex pushed to the north and northeast by the influx of the Yamnaya, and the bulk of population to be indigenous remnants of the Old Europeans, with a few exceptions of individuals of steppe origins<sup>8</sup> (GIMBUTAS 1991, 393). However, in a later publication she left the problem of the formation of the Corded Ware complex as an open question that has “not yet been resolved with any clarity” (GIMBUTAS 1993, 218).

Almost four decades had passed between the first time Marija Gimbutas described the so-called “Kurgan culture” in 1956 and her last publication of 1993. During the first two decades she already formulated several ideas about migrations of steppe groups (GIMBUTAS 1956; 1963), but only in the 1970s she fully articulated the three waves of migration theory (GIMBUTAS 1970; 1977; 1979), which she later updated according to new research and finds (GIMBUTAS 1991; 1993). Although her ideas have not

<sup>7</sup> For a detailed discussion regarding the cultures to which the finds were assigned see RASSAMAKIN 1999.

<sup>8</sup> She supported this statement by means of bio-anthropological analyses of the physical type of individuals.

changed that much over time, Marija Gimbutas not only adjusted the relative and absolute chronology of cultures and finds, but also introduced more subtle and nuanced changes in the terminology she used. *Table 1* contains the words chosen to describe the migrations from the steppe into Southeastern Europe as well as the “Kurgan people” responsible for them.

*Table 1. Words used to describe mobility and the steppe people in the work of Marija Gimbutas*

<b>Publication</b>	<b>Words used to describe human mobility</b>	<b>Description of “Kurgan people”</b>
GIMBUTAS 1963	<i>invasion</i> <i>intrusion</i> <i>conquering</i> <i>waves of expansion</i> <i>waves of invasions</i>	<i>intruders</i> <i>invaders</i> <i>patriarchal</i>
GIMBUTAS 1970	<i>invasion of hordes</i> <i>infiltration</i> <i>expansions and conquests</i>	<i>pastoralists</i> <i>vagabonds</i> <i>live by war and plunder</i> <i>(similar to Thracians)</i>
GIMBUTAS 1977	<i>migratory waves</i> <i>repeated incursions</i> <i>three phases of Kurgan intrusion</i> <i>kurgan thrust into Old Europe</i> <i>kurgan penetrations</i> <i>massive invasion</i>	<i>warlike horse people</i> <i>glorified the lethal power of the sharp blade</i> <i>horse-riding warriors</i>
GIMBUTAS 1979	<i>three waves of kurgan infiltration</i> <i>invasion</i> <i>kurgan intrusions</i>	<i>semi-nomadic horse riding Kurgan people</i> <i>patriarchal, ranked and warlike horse riders</i> <i>horse-riding warriors</i> <i>invaders</i>
GIMBUTAS 1991	<i>continuous flow of influences</i> <i>three waves of infiltration</i> <i>people streamed</i> <i>the third Kurgan thrust</i>	<i>warlike Kurgan horsemen</i> <i>invaders</i> <i>warlike, patriarchal and hierarchical</i>
GIMBUTAS 1993	<i>intrusion</i> <i>continuous flow of influences</i> <i>three waves of infiltration</i> <i>incursions</i>	<i>steppe pastoralists - warlike, patriarchal and hierarchical</i>

One can notice how in earlier publications Marija Gimbutas used words that conveyed stronger and more violent meanings, while in later articles her speech toned down. Thus, the “Kurgan people” went from “vagabonds”, “invaders”, “horse-riding warriors who glorified the lethal power of the sharp blade” to “steppe pastoralists – warlike, patriarchal and hierarchical”, while the “waves of invasion” of “hordes” slowly turned into “waves of infiltration” or even a “continuous flow of influences”. Nonetheless, the overall topic of the three waves of migration was preserved.

## **II. Archaeological record in Southeastern Europe**

Following this brief presentation, several questions arise. Can we identify archaeologically three waves of migrations from the steppes into Southeastern Europe, as Marija Gimbutas stated, by analysing burials (ANTHONY 1990; BURMEISTER 2000)? How does the archaeological record of these supposed

waves look like? Is the word “waves” appropriate to describe the processes taking place? In the lines below I will provide an overview of the archaeological record in Southeastern Europe during the second half of the 5<sup>th</sup> millennium BC, last centuries of the 4<sup>th</sup> millennium BC, and the beginning of the 3<sup>rd</sup> millennium BC, the times of the supposed waves of migration. It includes those finds and features that were interpreted as evidence for movements of steppe-originated groups or individuals into this region, displaying distinctive steppe characteristics of the burial ritual and grave goods. When available, aDNA analyses informing about the biological ancestry of the individuals will also be discussed.

## II. 1. The first wave

During the second half of the 5<sup>th</sup> millennium BC thriving societies were populating Southeastern Europe, for which Gimbutas coined the term “*Old Europe*”. Impressive settlements in the eastern Balkans and the Lower Danube area formed as a result of building homes on top of previous dwellings (tells), while flat settlements used for shorter periods are attested in other areas; houses had detailed painted decorations and comprised in some cases two stores, craftsmen created exquisite painted pottery, anthropomorphic and zoomorphic figurines as well as refined flint tools (BAILEY 2000; ANTHONY 2010). Copper and gold items were displayed in rich cemeteries, such as Varna I, in the coast region close to the Black Sea (LEUSCH *et al.* 2015).

At the same time in the Northwestern-Pontic steppe, apparently suddenly, emerged a new kind of individual burials, sometimes outstandingly equipped, that also reached the Lower Danube and the Balkans. This would account for Gimbutas’ first wave (*Fig. 1.1*). The origin of the individuals in these burials was debated, some scholars stating they originated and moved westwards from the Volga-Don region (GIMBUTAS 1991, 352; ANTHONY 2019a, 46), or the Lower Dnieper region (ANTHONY 2007, 249), even the hypothesis that they represent a local steppe elite emerging in the Northwestern-Pontic region was advanced (GOVEDARICA 2016, 84). Consequently, their cultural assignment was also different, being either considered an elite group within the Sredni Stog culture, called Suvorovo-Novodanilovka complex (ANTHONY 2007, 251) or part of the steppe Skelya culture (RASSAMAKIN 1999, 77; MANZURA 2005, 318). The graves show a burial custom focused on the individual, the most frequent body position was supine with flexed legs, but the extended position is also attested, ochre was intensively used, sometimes they were covered with small mounds; in some cases the graves contained impressive inventories consisting of jewellery, such as shell chains, copper artefacts, more rarely gold, exquisite tools made of copper and flint, as well as weaponry, and only very rarely pottery (see for example the Giurgiulești cemetery) (GOVEDARICA 2004, 85; ANTHONY 2007, 251–252; GOVEDARICA 2016, 86; HEYD 2016, 56; GOVEDARICA – MANZURA 2016). Based on the grave of Suvorovo, zoomorphic stone sceptres considered as the representation of horse heads are also included in this burial horizon (GOVEDARICA 2004, 103).

In Southeastern Europe several graves were interpreted as a result of migration as they do not find precedent in the local archaeological record, but have the characteristics of the above-mentioned steppe burials. Let us now briefly examine these graves. The flat grave in Csongrád-Kettőshalom, in Hungary (*Fig. 2.2*) contained an adult individual lying supine with the legs bent at the knees, and a considerable amount of ochre was found on the skeleton and inside the grave pit (ECSEDY 1971, 9). Grave goods comprised a 13.2 cm long obsidian blade, limestone and *Spondylus* shell beads, beads made of curved copper plate, and an ochre lump (ECSEDY 1971, 9). Similar characteristics can be seen in the cemetery from Decea Mureșului, in Transylvania. Here, the individuals were also laid supine with raised knees, ochre was abundantly used; grave goods consisted of pots, long flint blades, strings of beads made of bent copper sheet, *Unio* shell beads, and a four-knobs stone macehead was attested in grave 12 (*Fig. 2.4*) (GOVEDARICA 2004, 62 ff.; GOGÂLTAN – IGNAT 2011, 13ff.; *Fig. 3, 7*). Two graves were found in Kiulevcha, Bulgaria,

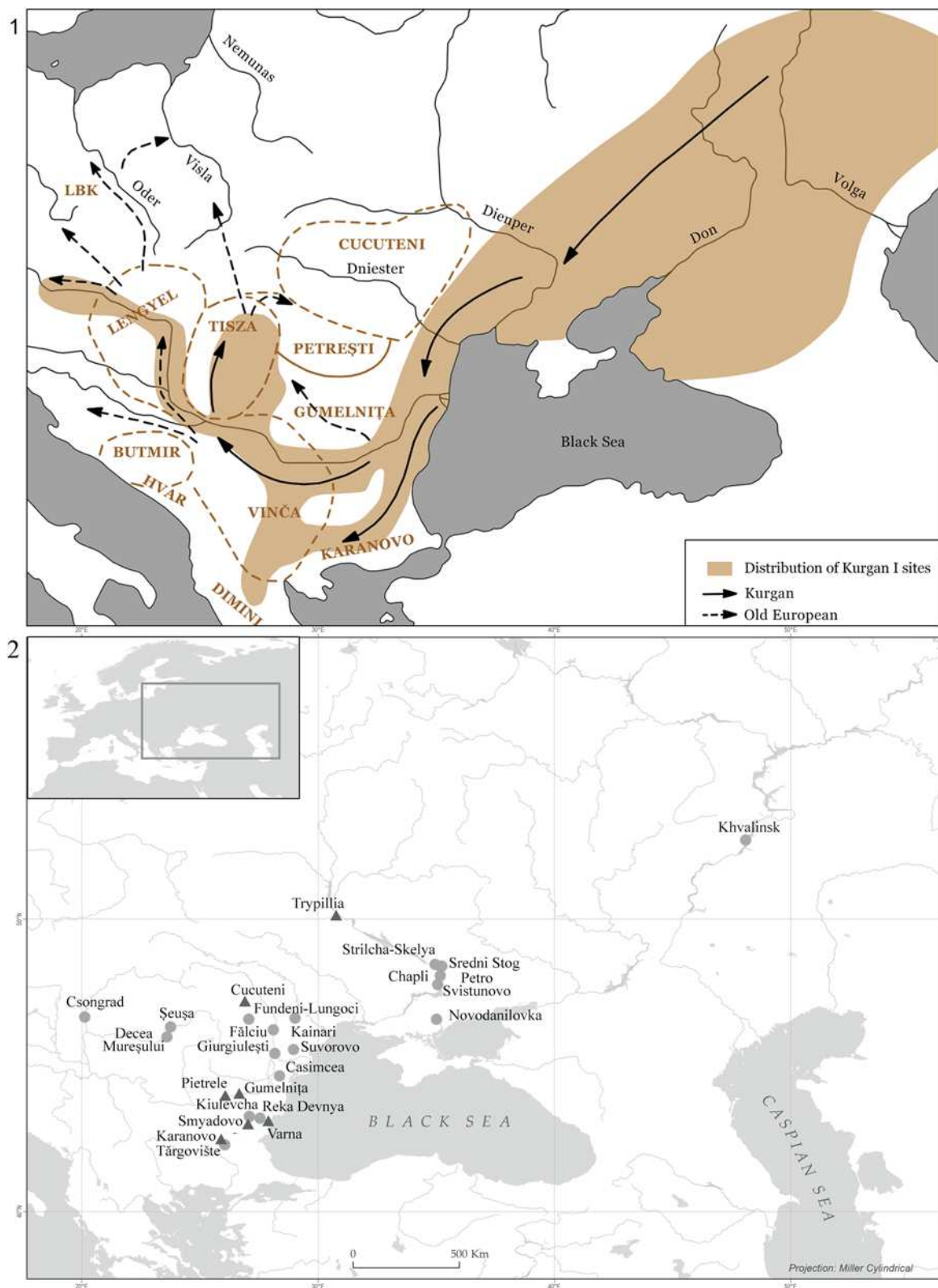


Fig. 1. 1. Distribution of the first Kurgan wave according to M. Gimbutas (after GIMBUTAS 1991, fig. 10. 6B redrawn); 2. distribution of the 5<sup>th</sup> millennium BC finds in Southeastern Europe (map by Bogdan Olariu; sites of Old Europe are marked with triangles and sites with steppe characteristics are marked with circles)



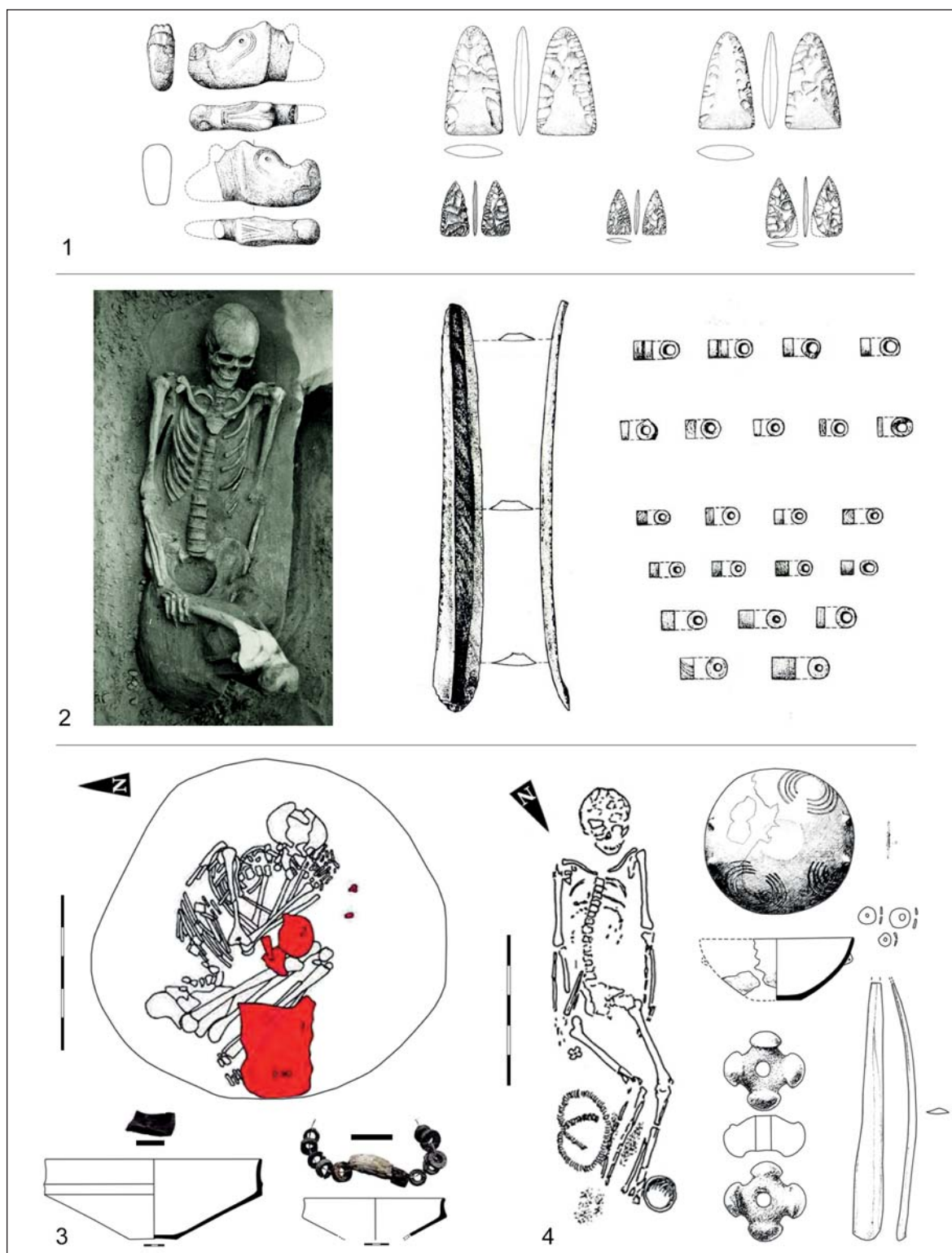


Fig. 2. 1. Casimcea: grave goods recovered from the burial (after GOVEDARICA 2004, Taf. 19-20); 2. Csongrád – Kettőshalom: picture of the burial and drawings of the grave goods (after ECSÉDY 1971, Fig. 3/1-4; DANI – PREDA-BĂLĂNICĂ – ANGI 2021); 3. Grave 29 from Smyadovo (after CHOHADZHIEV – MIHAYLOVA 2014, Fig. 35/2-6); 4. Grave 12 from Decea Mureșului and grave goods (after GOVEDARICA 2004, Abb. 8/2, Taf. 3/1-5)



numbers 27 and 33, and in both individuals were lying supine with raised knees and were covered with ochre; grave goods were found only in grave 33, consisting of a flint blade and a sceptre made of an axe with zoomorphic appearance attached to a long bone handle (GOVEDARICA 2004, 106). The grave from Reka Devnya, not far from Varna, was particularly rich in grave goods, consisting of 27 flint objects such as lance tips, blades, blade tips, four copper items, 31 pearls made of *Spondylus*, *Dentalium*, and copper, 34 gold rings, and a copper ingot (GOVEDARICA 2004, 106–109). The exact position of the individual is unknown, however, ochre was found on the bones and grave goods (GOVEDARICA 2004, 106). In several cases, kurgans were raised over the graves and these are the earliest attested in the whole of Southeastern Europe (HEYD 2016). In a destroyed mound from Casimcea, in Romanian Dobrudja (Fig. 2.1), along with bones coloured with red ochre the archaeologists recovered an impressive inventory comprised of a zoomorphic stone sceptre, three lance tips, two whole knife blades and another fragmentary one, a *grattoir* and two flint axes (POPESCU 1941). In Tărgoviște-*Gonova Mogila*, Bulgaria, the main grave contained an individual covered by ochre and most likely accompanied by a long obsidian blade and strings comprised of copper and shell beads (GOVEDARICA 2004, 109). The graves from Fălciu and Fundeni-Lungoci in Romanian Moldavia could be added, although they were destroyed and only bones covered with red ochre and grave goods were recovered (GOVEDARICA 2004, 83–84).

Alongside graves, further steppe impact can be seen in the spread of horse head sceptres or their local imitations found in the Balkans, Lower Danube and the eastern Carpathian Basin in settlements or isolated (FRÎNCULEASA – MIREA 2007; GOGÂLTAN – IGNAT 2011, Fig. 2; GOVEDARICA 2016, Fig. 5), the presence of four-knobs stone maceheads (GOGÂLTAN – IGNAT 2011, Fig. 3, 7), along with possible evidence of places of living and ritual activities in the site of Șeușa-*Gorgan* in Transylvania (CIUTĂ – MARC 2012), a Skelya tradition pot found in Pietrele (REINGRUBER – RASSAMAKIN 2016, Abb. 16, 297), and the shell-tempered Cucuteni C-type ware resembling Skelya culture pottery, found in Cucuteni settlements and spreading subsequently to the south up to Bulgarian Thrace (RASSAMAKIN 1999, 102; GEORGIEVA 2018, 99). The C-type ware was interpreted as a sign of contacts with the steppe, or even as a sign of the actual presence of steppe populations or persons within the Cucuteni-Tripolie and KGK VI worlds (MUNTEANU – GARVĂN 2011; GEORGIEVA 2018).

Returning to the graves described above, we do not know if the individuals buried in them were actual migrants from the steppes or not. Perhaps in the future aDNA and isotope analyses will provide further clues regarding their ancestry and mobility during their lifetime. For instance, the mtDNA of two of the burials from Decea Mureșului (graves 10 and 12) does not seem to confirm a migration from the steppe of these individuals, as it belongs to the K haplogroup, a mtDNA haplogroup associated with Anatolian Neolithic farmers (ROTEA *et al.* 2014, 27; HERVELLA *et al.* 2015, 6; ISERN – FORT – DE RIOJA 2017). However, this is particularly interesting because even if they were not direct migrants, during their funeral they were ascribed an identity different of the one usually encountered in local cemeteries. The mourners were familiar with the burial practices from the steppes, the rules were strictly followed: ochre was procured and sprinkled in large quantities over the pit bottom and deceased, the individuals were laid on their backs, the knees were raised, and typical grave goods were put next to them. If funeral rituals are a means not only to reflect or demonstrate identities the deceased had during their lives, but also to actively manipulate or construct them, then a steppe identity was symbolised for the buried individuals (REIMERS 1999, 148; PARKER PEARSON 2010, 32–33). Information about their paternal ancestry would help clarify further if a steppe connection indeed existed, however such analyses are missing for the moment.

Nonetheless, even if the rest of the mentioned individuals were migrants with steppe origins, the rather isolated and small number of graves hardly justifies the word “wave” to describe their migration. Taking a look at the map (Fig. 1.2) one can notice that particular regions were of interest. This image

looks like the result of a leapfrogging migration of individuals or small groups to targeted areas, most likely connected to natural resources such as obsidian<sup>9</sup>, copper or gold (ANTHONY 1990, 903; 2007). Across the steppe region as far as Volga and North Caucasus, the presence of Balkan raw materials and objects is visible in rich burials furnished with metal goods, especially made of copper but also of gold, high quality flint as well as ornamental shells (RASSAMAKIN 1999, 100; HEYD 2016, 59). We mention here sites such as Novodanilovka, Chapli, Petro-Svistunovo and Khvalinsk, indicating a return migration (ANTHONY 1990, 903; 2019a, 45; RASSAMAKIN 1999, fig. 3.15, 3.16; GOVEDARICA 2004). As Y. Rassamakin already pointed out, the burials might account for the mobility of a special category of high-status individuals, controlling an exchange network of prestige and luxury objects between the Balkans and the steppe (RASSAMAKIN 1999, 102).

No other individuals with supposed steppe origins have been tested for aDNA so far, but the situation is likely to change in the near future. Nonetheless, the hypothesis finds indirect support in recent results showing that three individuals from the Varna region in Bulgaria had steppe ancestry. One of them is the richest grave in Varna, grave 43, although in his case the steppe ancestry was quite distant (MATHIESON *et al.* 2018, 200; ANTHONY 2019a, 41–42). The other two, grave 158 in Varna and grave 29 in Smyadovo (Fig. 2.3) had recent steppe ancestry, similar to the one found in individuals from the Volga region, and the ancestors with steppe origins were most likely men (MATHIESON *et al.* 2018, 200; ANTHONY 2019a, 41). However, in these cases the biological ancestry of the individuals was not acknowledged in any way in the burial ritual and they were buried according to local customs. We do not know if the steppe origin was remembered or part of the identity of the deceased in any way (FRIEMAN – HOFMANN 2019, 537). Given the richness of their burial equipment, the ancestry of these individuals was interpreted as a sign of occasional marriage between the ruling elites of Southeastern European agricultural societies and steppe people from the Volga region (ANTHONY 2019a, 42). So far, the results do not confirm the hypothesis of a major role played by people from the Dnieper Rapids, the area of the Skelya culture, in this process (RASSAMAKIN 1999, 104; ANTHONY 2019a, 42). These alliances would have secured the existence of the exchange networks that, in turn, also transformed the steppe. Indeed, scholars parallel the cemeteries from Varna and Giurgiulești not only chronologically, but also in terms of structure, suggesting that access to new raw materials, technologies and knowledge coming from the Danube and the Balkans stimulated a similar reaction in steppe societies (RASSAMAKIN 1999, 102; GOVEDARICA – MANZURA 2016, 23, 29).

Table 2. <sup>14</sup>C dates for graves of individuals with steppe ancestry

Lab ID	Site name/Grave	BP	Date cal BC 2 sigma (95.4%)	References
OxA-13688	Varna, Grave 158	5787±30 BP	4713–4549	KRAUSS <i>et al.</i> 2017, Tab. 2
MAMS-30944	Varna, Grave 158	5755±24 BP	4692–4509	KRAUSS <i>et al.</i> 2017, Tab. 2
MAMS 15095	Varna, Grave 43	5662±27 BP	4580–4371	KRAUSS <i>et al.</i> 2017, Tab. 2
OxA-13685	Varna, Grave 43	5720±29 BP	4678–4458	KRAUSS <i>et al.</i> 2017, Tab. 2
Beta-432803	Smyadovo, Grave 29	5680±30 BP	4606–4447	MATHIESON <i>et al.</i> 2018, 200; ANTHONY 2019a, 41–42

<sup>9</sup> For instance, the individual from Csongrád-Kettőshalom had as inventory a blade made from local obsidian (BIRÓ – MARKÓ – KASZTOVSZKY 2005, 91).

Table 3. <sup>14</sup>C dates for graves of individuals with steppe burial ritual

Lab ID	Site name/Grave	BP	Date cal BC 2 sigma (95.4%)	References
KIA 369	Căinari	5580±50	4532–4340	GOVEDARICA 2004, 82, Abb. 13
Poz-41865	Csongrád-Kettőshalom	5470±40	4442–4243	HORVÁTH <i>et al.</i> 2013, tab. 3
Beta-317252	Decea Mureșului/ DM 4 (Grave 10)	5280±30	4236–3991	ROTEA <i>et al.</i> 2014, Pl. XIX
KIA 368	Decea Mureșului, Grave 12	5380±40	4336–4056	GOVEDARICA 2004, 73, Abb. 9
MAMS 23175	Giurgiuilești, Grave 3	5370±26	4330–4058	GOVEDARICA – MANZURA 2016, tab. 1
MAMS 28087	Giurgiuilești, Grave 3	5504±31	4445–4265	GOVEDARICA – MANZURA 2016, tab. 1
MAMS 28088	Giurgiuilești, Grave 4	5571±32	4484–4346	GOVEDARICA – MANZURA 2016, tab. 1

According to the available <sup>14</sup>C dates this interaction lasted several centuries, covering most of the second half of the 5<sup>th</sup> millennium BC (*Fig. 3.a–b; Tables 2–3*) (HORVÁTH *et al.* 2013; ROTEA *et al.* 2014, 27; GOVEDARICA – MANZURA 2016, 17ff.). Therefore, one cannot talk about a wave of migration as a single, unidirectional and catastrophic event, but rather, in David Anthony’s words, about a complex, multi-generational human process that created social dynamics both at home and in the destination, including new kinds of socio-political hierarchy (ANTHONY 2021, 2). It was a period of exchanges and

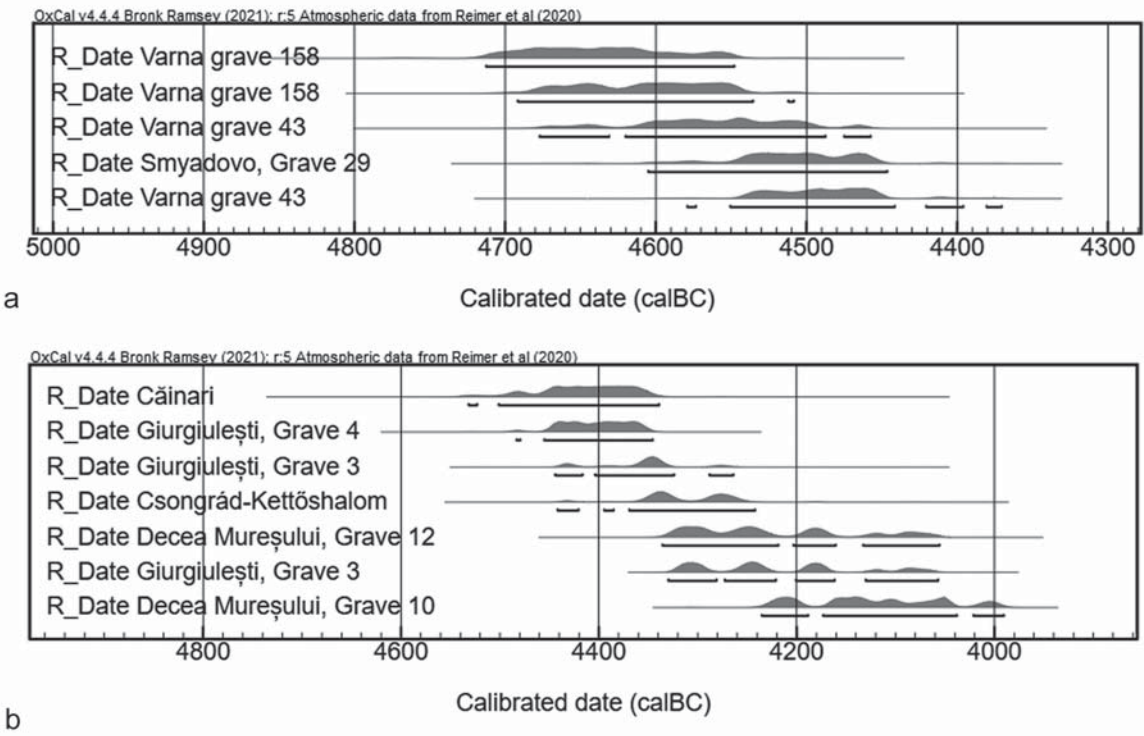


Fig. 3. a. Calibration of <sup>14</sup>C dates for graves of individuals with steppe ancestry; b. calibration of <sup>14</sup>C dates for graves of individuals with steppe burial ritual. All datings are calibrated with the OxCal v4.4.4 using the IntCal20 atmospheric curve (BRONK RAMSEY 2009; REIMER *et al.* 2020), and given in 95.4% probability

enrichments during which steppe populations explored *Old Europe*, adopted luxury goods, absorbed and adapted ideas. It is not clear if in the end they brought about the collapse of the Eneolithic societies around 4250 BC, when settlements were burned and abandoned north and south of the Lower Danube, in the Balkans, on the Aegean coast and even in Greece (ANTHONY 2007, 227; REINGRUBER 2015), as Marija Gimbutas envisioned. Other explanations focused on environmental factors such as the downfall of agriculture, maybe triggered by significant climate change, with cold years, or the degradation of the environment caused by human exploitation, on internal societal factors such as the increase of social inequality or low economic growth (BAILEY 2000, 260; TODOROVA 2003, 290; ANTHONY 2007, 227–228; WINDLER 2017). However, one has to note that at the same time rich assemblages also disappeared from the steppe region (RASSAMAKIN 1999, 112).

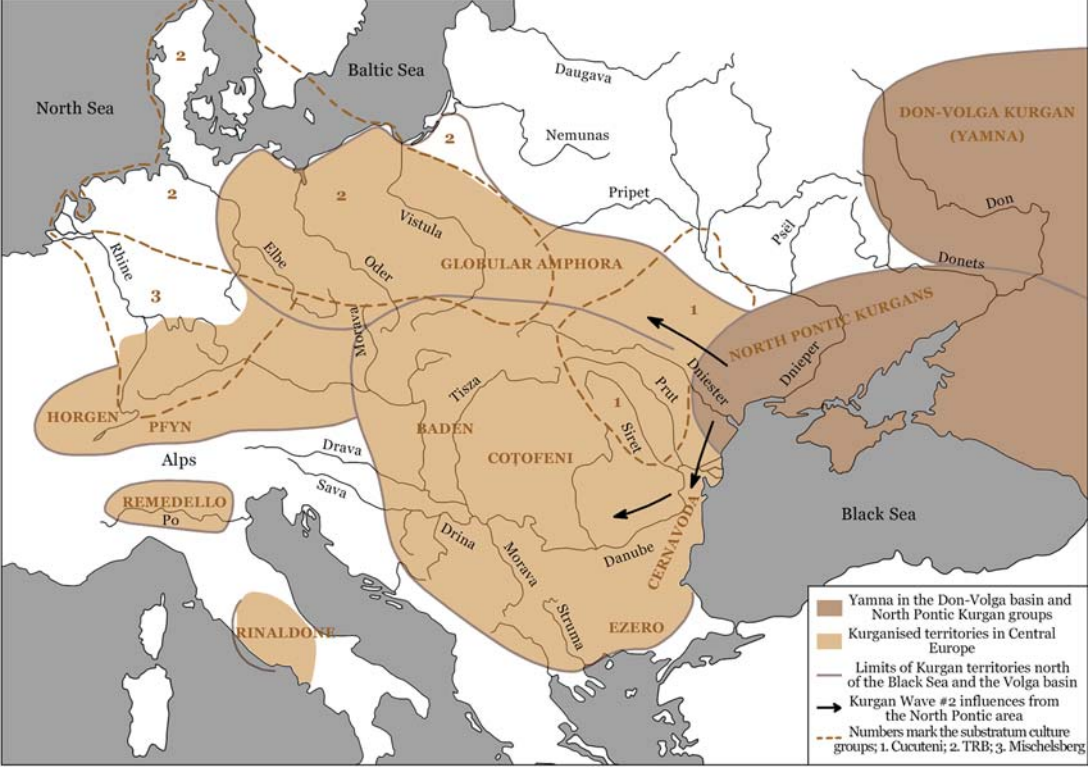
## II. 2. The second wave

Following the collapse of the Eneolithic societies at the end of the 5<sup>th</sup> millennium BC the archaeological record is elusive, wide regions in the Balkans barely show any traces of human habitation (MANIATIS *et al.* 2014; GEORGIEVA 2018, 103). In the first half of the 4<sup>th</sup> millennium BC the only somehow consistent discoveries belong to Cernavoda I culture, with few settlements with thick archaeological deposits and small flat cemeteries, isolated burials, or small kurgans sometimes surrounded by stone cromlechs or even ditches (MANZURA 1999, 115, 120; ANTHONY 2010; FRÎNCULEASA – MIREA – TROHANI 2017). Gimbutas defined it as a “Kurganish complex”, while I. Manzura suggested it developed based on local traditions of the Eneolithic world, while for the moment no aDNA studies include samples from Cernavoda I contexts (GIMBUTAS 1993, 209; MANZURA 1999, 145). The origins and nature of the following phase, of the Cernavoda III-Boleraz phenomenon (roughly between 3600 and 3300 BC) are also a matter of ongoing debate, as is the potential existence of burials under mounds in this period, which might actually be connected with the Usatovo culture (OANȚĂ-MARGHITU 2003; ALEXANDROV – KAISER 2016, 365, 368; ALEXANDROV 2018, 90). Habitation traces become more consistent during the last third of the 4<sup>th</sup> millennium BC, which sees the emergence of trans-regional phenomena such as Baden, Coțofeni-Kostolac in Central Europe and Central Balkans and Ezero-Karanovo VII in Bulgaria; resemblances relate mainly to pottery, while the funerary practices show variation between regions, with both cremation and inhumation being attested (ROMAN 1976; SACHSSE 2010; KAPURAN – BULATOVIĆ 2012; DEMOULE 2017, 57–58; ALEXANDROV 2018). North of the Danube, in eastern Muntenia, Dobrudja and southern Moldavia, the archaeological record consists of Cernavoda II and Foltești sites (FLORESCU 1965; BERCIU – MORINTZ – ROMAN 1973), and further north, in central and northern Moldavia one can find settlements and graves of Trypillia CII groups such as Horodiștea, Erbiceni and Gordinești (DUMITROAIA 2000, 28; SÎRBU – KRÓL – HEGHEA 2020).

Gimbutas dated the second wave of migration from the steppes between 3400–3200 BC in her 1979 article, and after 3500 BC onwards in her 1993 article (*Fig. 4.1*). The supposed invaders originated from the North-Pontic/North-Caucasus region, a view that did not receive much support (GIMBUTAS 1979, 120; 1991, 401; ANTHONY 1986; 2021, 7). However, recent excavations have considerably enriched the available data, and a growing number of finds attests the emergence of a horizon of kurgan burials about the same time as Gimbutas’ second wave (*Fig. 4.2*) (GIMBUTAS 1979, 120 ff.). The dating of this horizon in the last third of the 4<sup>th</sup> millennium BC and the very beginning of the 3<sup>rd</sup> millennium BC is now secured by both absolute and relative chronology. There is a significant amount of available <sup>14</sup>C dates, relevant stratigraphic positions in mounds (always primary burials or even if secondary, always earlier than Yamnaya graves), as well as grave goods with analogies in other safely dated contexts (FRÎNCULEASA *et al.* 2014; FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA *et al.* 2019; FRÎNCULEASA 2020, 39).



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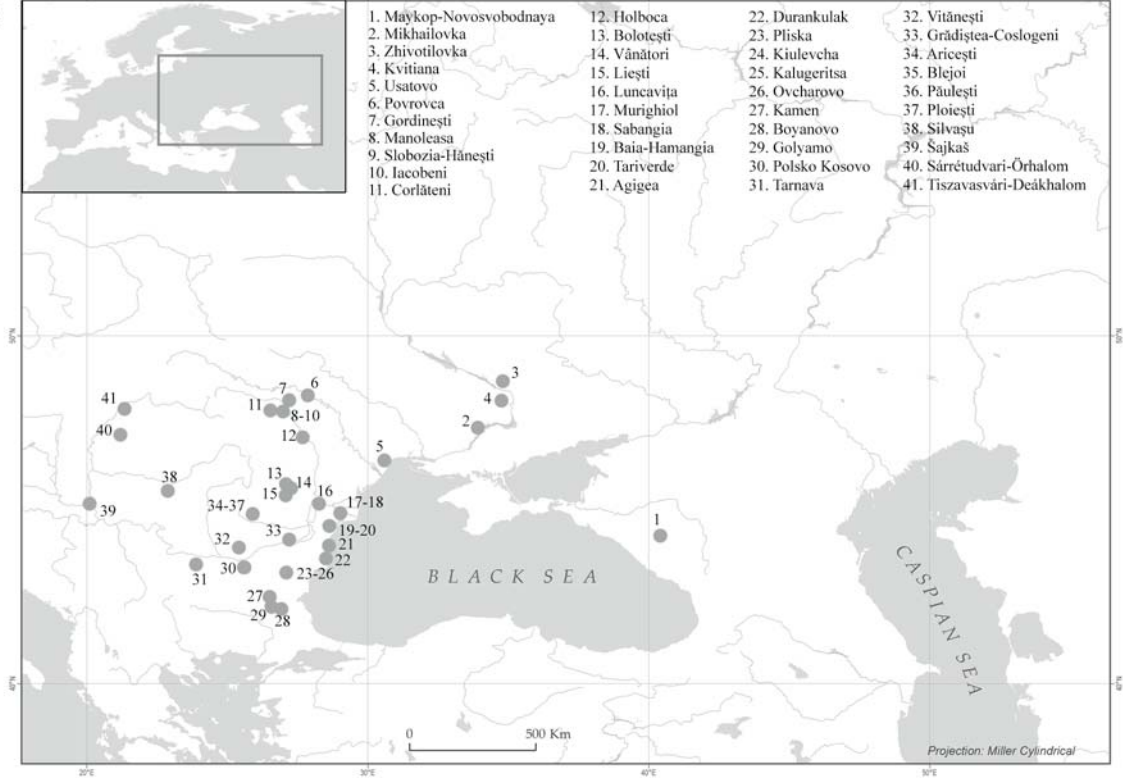


Fig. 4. 1. Distribution of the second wave according to M. Gimbutas (after GIMBUTAS 1991, fig. 10–13); 2. sites dated to the second half of the 4<sup>th</sup> millennium BC and the beginning of the 3<sup>rd</sup> millennium BC (map by Bogdan Olariu)



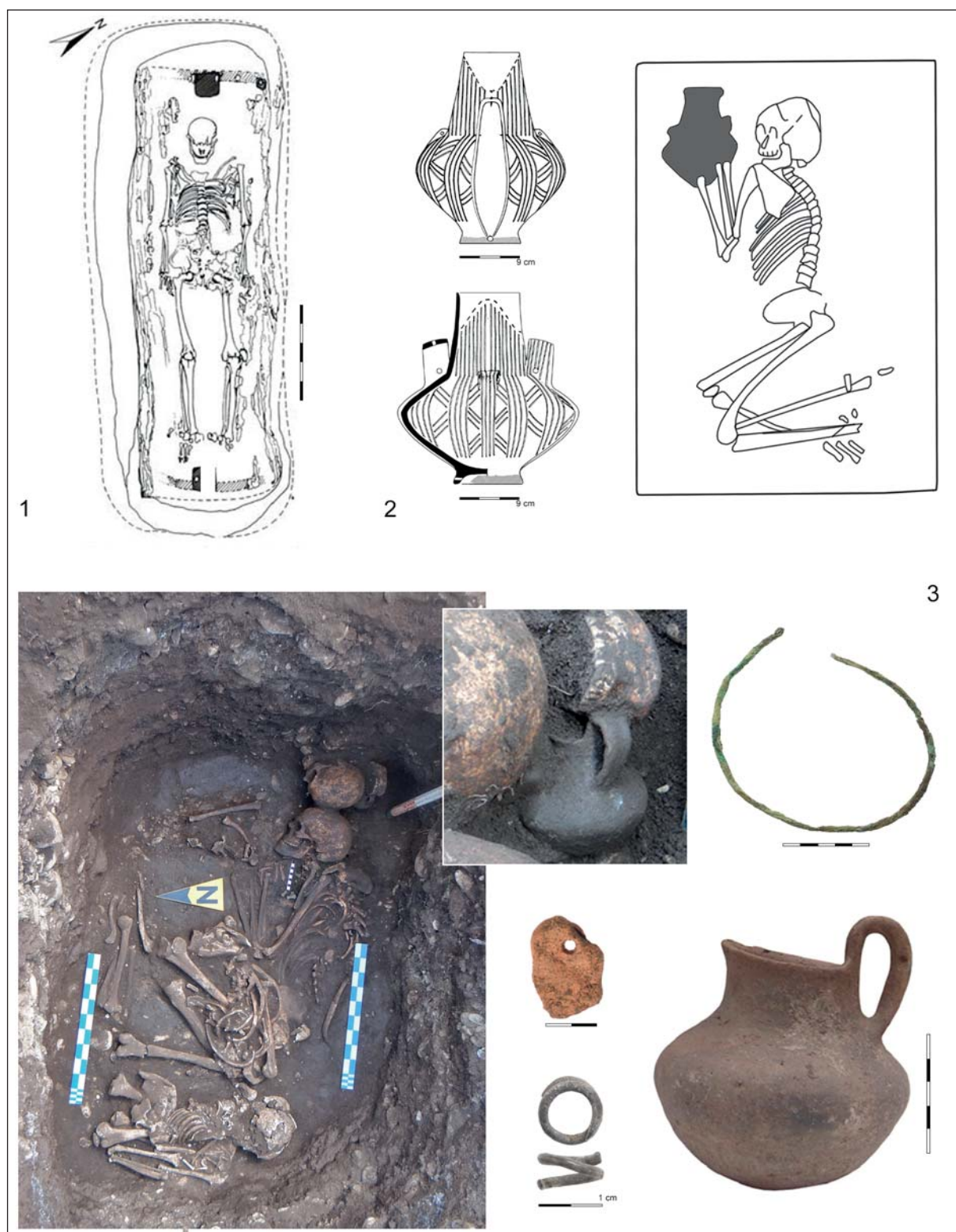


Fig. 5. 1. Tiszavasvári-Deákhalom – extended burial (after FRÎNCULEASA – MIREA – TROHANI 2017, Pl. XVIII/2);  
 2. Tarnava, mound 1: reconstructed drawing of grave 1 and pot found in the burial (after ALEXANDROV 2019, Pl. III, Pl. VI/3; PANAYOTOV 1989, Fig. 36); 3. Ariceştii-Rahtivani IV/grave 5: drawing of the grave and photos of grave-goods (after FRÎNCULEASA et al. 2014, Pl. 9–10)

These graves show certain regional peculiarities, especially in terms of grave goods. Thus, in Moldavia some contain vessels typical of Tripolie CII groups (e.g. Liești) (BRUDIU 2003, 45), or Cernavoda II/Foltești II ceramics (e.g. Vânători, Bolotești), the latter also found south of the Danube (in Pliska) (BURTĂNESCU 2002, 394; ALEXANDROV – KAISER 2016, 361). Although not very consistent in the archaeological record, this image might just reflect the current state of research. More consistent data come from graves with vessels typical of the Coțofeni culture in the regions of Muntenia, Oltenia and south of the Danube (ALEXANDROV 2019; FRÎNCULEASA 2020). Intensive research carried in the past ten years in northern Muntenia is particularly relevant.

There, the mounds revealed a set of very specific burial practices: circular gravel structures built around main burials, individuals laid mostly crouched on the side, usually with their arms flexed, oriented to various directions, ochre is sometimes found; collective burials are frequent and in many cases the post-mortem manipulation of the deceased is attested (e.g. grave 5 in Aricești IV; *Fig. 5.3*) (FRÎNCULEASA *et al.* 2014; 2019, 69; FRÎNCULEASA 2020, 38). Most intriguing is the diversity and richness of grave goods, comprised of several categories: pottery with good analogies in the third phase of the Coțofeni culture, found either in graves or in features in kurgans (Aricești VI) (FRÎNCULEASA *et al.* 2014; FRÎNCULEASA 2020; 42–44); varied ornaments such as copper torques, necklaces comprised of spectacle-shaped pendants, *Dentalium* and *Unio* pearls, copper tubular pearls; silver spiral hair rings are also common; and weapons such as copper flanged axes or stone shaft-hole axes (FRÎNCULEASA *et al.* 2014; 2019, 69; FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA 2020, 38, 55). These burials illustrate a local aspect of a process that is encompassing a much wider geographical range, as similar features were also found south of the Danube. The *Gabrova Mound*, close to Kamen village, had two primary burials: a collective grave of seven individuals indicating the post-mortem manipulation of bodies (Grave 24), and another collective burial of four individuals laid in extended position (Grave 30) (DIMITROVA 2014). The inventory of grave 30 is exquisite and comprises silver spiral hair rings, *askos* pots, two axe-chisels and two daggers made of arsenic bronze, amulets made of boar's tusks (DIMITROVA 2018, 317). Another example is Mound I in Tarnava, to which M. Gimbutas also referred, containing inhumation and cremation burials with typical Coțofeni III ware (*Fig. 5.2*) (ALEXANDROV 2019, 84). One has to note here that the association between cremation burials with Coțofeni pottery and kurgans is also attested in other sites, such as Silvașu or Tarnava mound II (ALEXANDROV 2019, 79; DIACONESCU 2020, 22). Furthermore, it is in this period that cord-decoration appears once again on pottery, especially on Coțofeni III ware, but also on Kostolac ceramics in the regions of Banat, Timočka, Krajina, Oltenia and western Bulgaria (BULATOVIĆ 2014, 131).

Although less visible because they lack inventories, other burials need to be mentioned as well. Examples come from all regions and their dating is supported by <sup>14</sup>C analyses and relative chronology. We mention here the <sup>14</sup>C dated grave 3 from Păulești II, in Muntenia, and grave 12 of the Sárretudvari-Örhalom kurgan, in the Hungarian lowlands (GERLING *et al.* 2012; 1101, tab. 1; FRÎNCULEASA – PREDA – HEYD 2015, 58, tab. 2). To these are added burials that are either primary or stratigraphically earlier in mounds that are taken over by Yamnaya communities at the beginning of the 3<sup>rd</sup> millennium BC, such as the ones in Boyanovo (ILIEV 2011, 384). In these graves, the deceased are usually laid in a crouched position on the side. However, to the same period also belong burials with individuals lying in supine extended position. This ritual is not so common in the region, but can be found during the late 4<sup>th</sup> millennium BC and even survives in the 3<sup>rd</sup> millennium BC, with good examples in Vitănești (Romania), Tiszavasvári-Deákhalom (Hungary) (*Fig. 5.1*), Kalugeritsa (Bulgaria), and perhaps also in Šajkaš (Serbia) (ALEXANDROV 2011, 311; HORVÁTH *et al.* 2013; FRÎNCULEASA – MIREA – TROHANI 2017; KOLEDIN *et al.* 2020).

Most of the kurgan burials presented above show a mixture of elements with seemingly different origins. As already mentioned, vessels are mainly related to the various local pottery traditions; some of the metal and shell weapons and ornaments such as spectacle-shaped pendants, flanged axes, *Dentalium* beads and the copper torque could be connected to Transylvania or Central Europe (BONDÁR – RACZKY 2009; FRÎNCULEASA 2020, 54). Furthermore, the similarity of some grave goods and ritual elements with Baden burials has been already highlighted (FRÎNCULEASA 2020, 54). On the other hand, the central burial under a kurgan, maybe the presence of stone/gravel structures surrounding the main graves<sup>10</sup>, the silver spiral hair rings, the presence of ochre, point to a steppe connection (FRÎNCULEASA – PREDA – HEYD 2015). In the second half of the 4<sup>th</sup> millennium BC the closest north-west Pontic roughly contemporary features are the Usatovo graves, dated to the third quarter of the 4<sup>th</sup> millennium BC (MANZURA 2020, 76). Deeper into the steppe, one can find sites of the Lower Mikhailovka and Kivityana cultures to the east and north, Konstantinovska culture on the Lower Don and, in northern Caucasus, Maykop-Novosvobodnaya features (RASSAMAKIN 1999, 122 ff.; REZEPKIN 2000; MANZURA 2016; 2020). At both ends of this territory striking similarities between Usatovo and Maykop-Novosvobodnaya graves in terms of their monumental architecture, burials rites, grave goods, and presence of arsenic bronzes have to be noted (REZEPKIN 2000; MANZURA 2016, 54; HANSEN 2021). Slightly later, Zhivotilovka graves had a true trans-regional character, crossing the steppes from the Northern Caucasus to Eastern Carpathians, uniting previously isolated steppe areas and covering the areas of all the above-mentioned cultures by means of wheeled transportation (RASSAMAKIN 1999, 123; MANZURA 2016, 54, 64).

Both Usatovo and Zhivotilovka groups buried people under kurgans. The rich Usatovo graves had complex stone structures and contained prestigious goods such as metal weapons and various ornaments, including silver hair rings (MANZURA 2020, 81, 85). Furthermore, metal objects made of arsenic bronze are a trademark of Usatovo burials, sometimes combined in “burial kits” together with pottery (MANZURA 2020, 78; HANSEN 2021). We mention a similar situation in the Gabrova Mound in Kamen presented above, where each individual in grave 30 had as grave goods silver spiral hair rings, daggers and axes of arsenic bronze and askos pots, in various combinations (DIMITROVA 2018, 317). The deposition of bodies in crouched position is typical for Lower Mikhailovka, Usatovo and Zhivotilovka graves, and the presence of double or collective burials together with the practice of ochre straying is also documented in graves of the latter (RASSAMAKIN 1999, 114; MANZURA 2016, 59, 61). However, contemporary double and collective burials, in some cases with the post-mortem manipulation of bodies are also attested in the Baden culture (KRUMPEL 2012). As for the mentioned extended burials, they display burial practices typical of the Kivityana tradition in the steppe (RASSAMAKIN 1999, 83).

The question that emerges is who are the individuals buried in kurgans across the steppe-like regions of Southeastern Europe? Are they, as Marija Gimbutas assumed, migrants from the North-Pontic/North-Caucasus region, who incorporated local pots, weapons and ornaments in their graves? Or are they local populations that adopted steppe burial practices? No aDNA analyses to inform us about the ancestry of these individuals have been published so far. To the east, three individuals from Povrovca and Gordinești, dated in the second half of the 4<sup>th</sup> millennium BC in late Cucuteni-Trypillia contexts, showed considerable amounts of steppe ancestry (IMMEL *et al.* 2020). The actual mobility of some individuals or small groups from and across the steppe in this period is very likely. However, the peculiarity and local aspects these graves take suggest a different interpretation. It is more likely that the presence of kurgans with local inventories in Southeastern Europe is better explained by the adoption of the habit of mound burials reflecting the desire of local individuals to display their status and wealth (FRÎNCULEASA 2020, 55). The emergence of funerary features with steppe attributes does not need to involve a wave of migration from the North-Caucasus or Dnieper region as envisioned by M. Gimbutas,

<sup>10</sup> However, stone structures are also found in Baden burials (SACHSSE 2010).



but can rather be the result of intensified circulation of goods, ideas and new technologies within inter-regional networks, boosted by the invention of wheeled transportation (HANSEN 2010; BURMEISTER 2017b). For the moment, the genetic evidence also speaks against a flow of Maykop pastoralists into the steppe (ANTHONY 2019a, 44).

There are other points in Gimbutas' second wave of migration that do not stand against the current available data. She considered the individuals associated with Baden and Globular Amphora material culture as steppe migrants, however aDNA analyses indicate most of them were descended genetically almost entirely from local farmers (MATHIESON *et al.* 2018, 200; ANTHONY 2021, 4). She also described Coțofeni culture as a vestige of the Old European tradition, as sedentary agriculturalists living in solidly built houses, but the rich kurgan burials with Coțofeni pottery, weapons and ornaments suggest this was a simplification blurring more complex processes.

### II. 3 The third wave

Marija Gimbutas dated the third wave of migration from the steppes at the beginning of the 3<sup>rd</sup> millennium BC and connected it to the Yamnaya pastoralists (*Fig. 6.1*) (GIMBUTAS 1979, 127). Their graves covered a wide area of the European continent, stretching from the Ural Mountains in the east to the Hungarian Plain in the west (*Fig. 6.2*) (MERPERT 1974; HEYD 2011; FRÎNCULEASA – PREDA – HEYD 2015). Based on a certain variation in burial ritual or material culture, scholars distinguished regional variants or peculiarities, such as the nine regions defined by N. Merpert, or even assigned them to separate cultures such as the Budzhak-type of graves between Prut and Dniester (MERPERT 1974, 14–15, *fig. 1*; IVANOVA 2013). For this reason, Yamnaya related references in archaeological publications often use terms such as cultural-historical region/community, horizon, or phenomenon (ANTHONY 2007; RASSAMAKIN 2013). The origins, chronology, material culture and burial ritual have been studied and categorised for more than a century, raising thorough debates. Most scholars agree that the Yamnaya burial ritual originated in the steppes, although the exact region is still not clear, spreading quickly across the entire north-Pontic area (MERPERT 1974; ANTHONY 2007, 317), although an alternative hypothesis of a system transformation of local cultures or groups to the formation of more or less unified and steady phenomenon has also been advanced (RASSAMAKIN 2013, 115).

The burial practices included a central grave under a kurgan, the supine with raised knees posture of the deceased, ochre staining on grave floors near the feet, hips and head, north-eastern to eastern body orientation, or western in other regions, no distinction between men and women in the burial rite, and arranging the burial chamber with mats and wood (ANTHONY 2007, 304; SHISHLINA 2008; KLEJN *et al.* 2018, 4). In the Volga-Don steppes, grave inventories consisted of shell-tempered, egg-shaped vessels sometimes decorated with cord impressions, tanged daggers, cast flat axes, bone pins (ANTHONY 2007, 304). In other regions various grave goods are included. For instance, metal objects are more common in the Volga-Ural region, which is rich in copper deposits (CHERNYKH 1992, 85), anthropomorphic stone stelae in the regions close to the Kemi-Oba culture, especially between the Lower Bug and Dnieper (TELEGIN – MALLORY 1994, 30, *Fig. 19*), beakers and amphorae in the Dniester-Prut interfluve (IVANOVA 2013, 95). The movement of people was accompanied by the dissemination of a set of burial practices, which absorbed local elements of material culture, creating thus its different aspects and local variants (ANTHONY 2007, 327). Differences comprise economic strategies such as predominance of cattle or sheep and the already mentioned regional variability in material culture (SHISHLINA 2008).

That a migration into Southeastern Europe indeed took place is the most accepted part of Marija Gimbutas' theory, mainly due to the presence of thousands of kurgans north and south of the Lower Danube, in Thrace and the Pannonian Plain, out of which several hundreds have been excavated

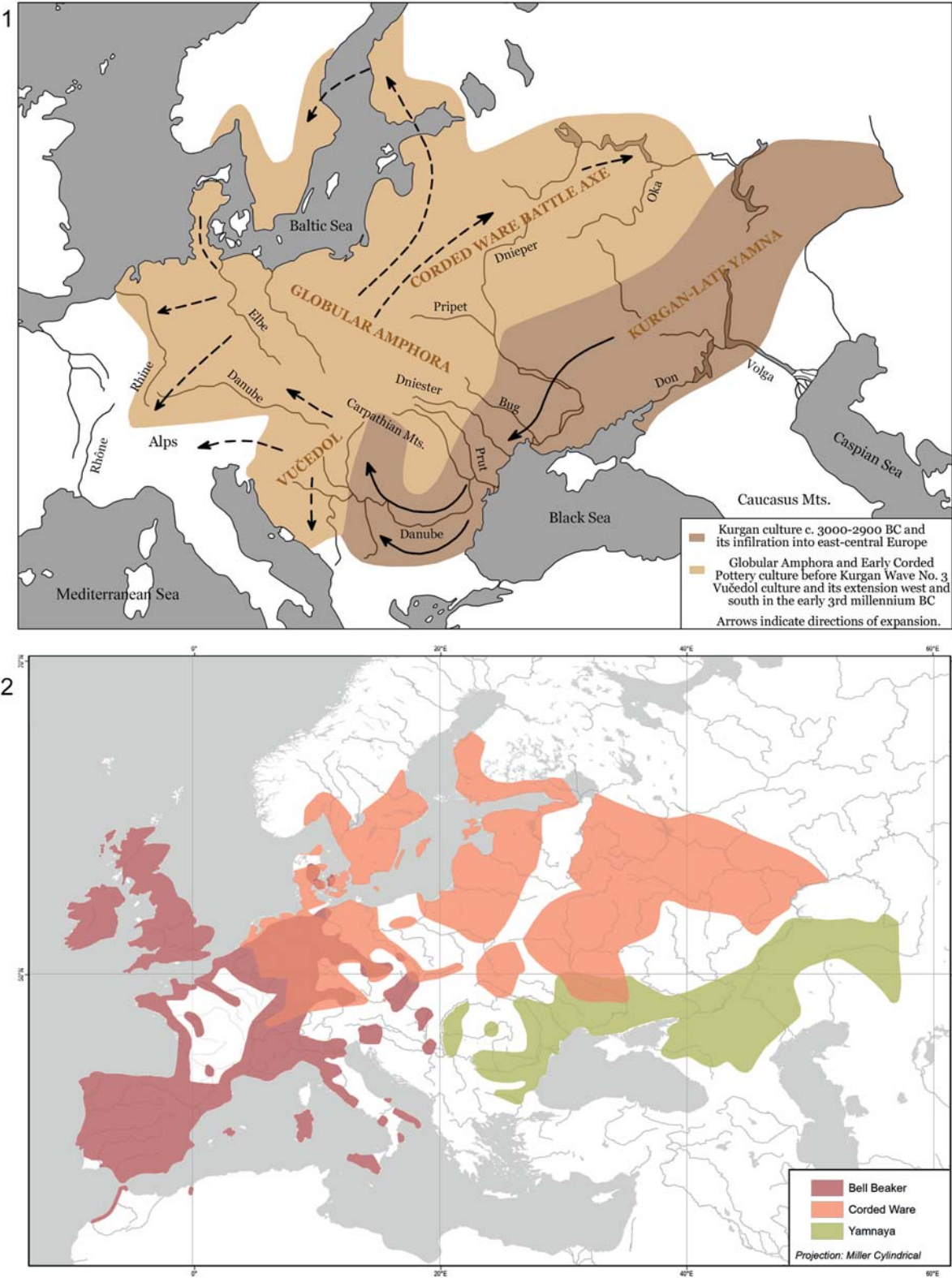


Fig. 6. 1. Distribution of the third Kurgan wave according to M. Gimbutas (after GIMBUTAS 1991, fig. 10-32 redrawn); 2. distribution of the Yamnaya, Corded Ware and Bell Beaker burials (after MERPERT 1974, fig. 1; RISCH et al. 2015, Fig. 2; NORDQVIST – HEYD 2020, fig. 1)



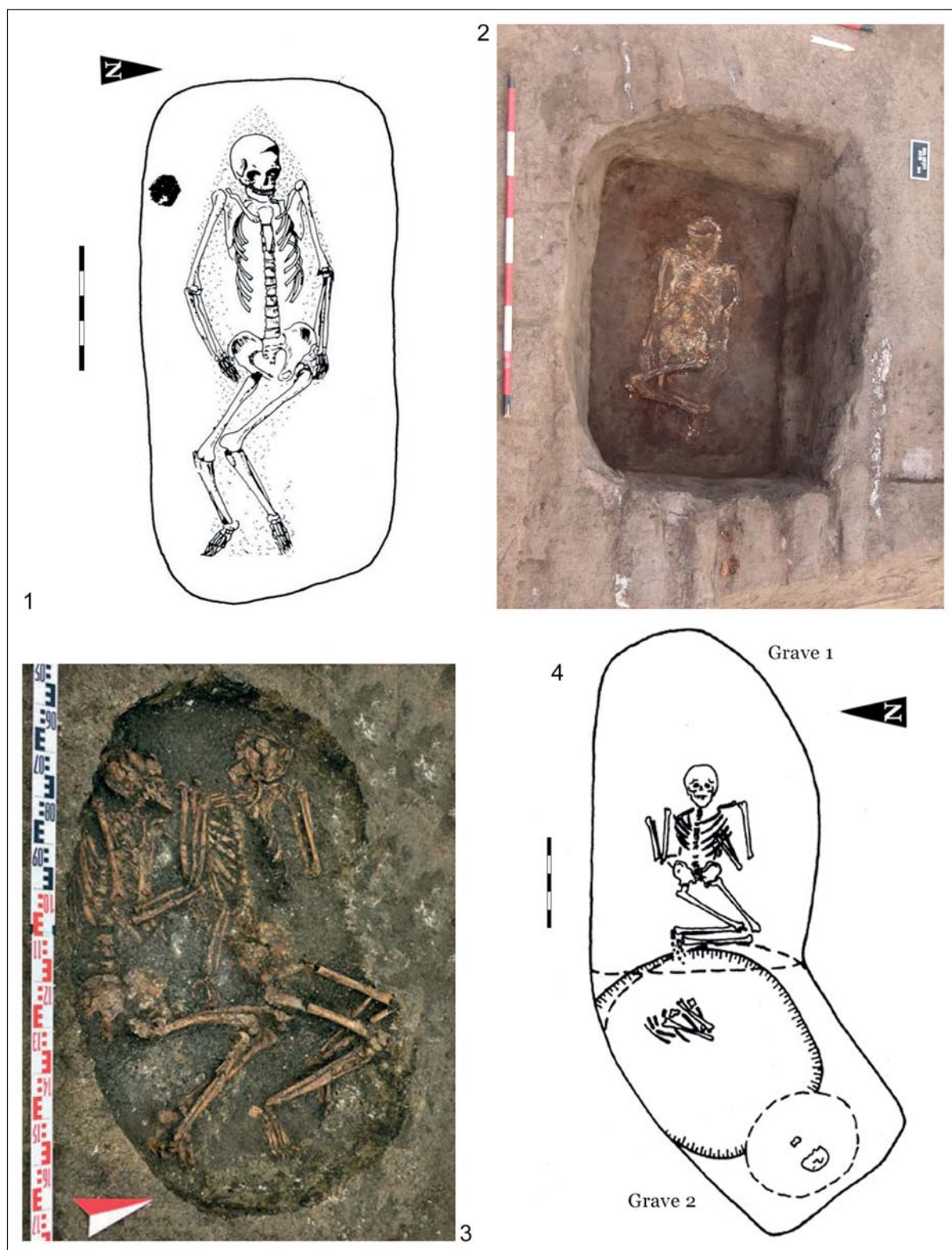


Fig. 7. 1. Kétegyháza, kurgan 6, grave 1 (after ECSÉDY 1979, Fig. 10); 2. Boldești-Grădiștea, mound 1, grave 4 (after FRÎNCULEASA et al. 2020b, Pl. 2/6); 3. Beli Breyag, mound 5, feature 3 (after ALEXANDROV – GALABOVA – ATANASSOVA-TIMEVA 2016, 154, fig. 3); 4. Mednikarovo mound 2, grave 1 (after PANAYOTOV – ALEXANDROV 1995, 88, fig. 6)

and revealed typical Yamnaya burials (PREDĂ-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 96–97). No settlements are connected to kurgans in this region, so graves remain the only source of information (HEYD 2011, 539). The Yamnaya ritual between the Prut and the Tisza Rivers consisted of central burials under kurgans, the predominance of male graves, the supine with raised knees posture, west-east orientation, no gender differentiation between male and female burial ritual, ochre staining, arranging of burial chamber with mats and wood (*Fig. 7.1–2*), grave-goods usually limited to vessels, hair rings and necklaces made of animal teeth (HEYD 2011, 539–541; FRÎNCULEASA – PREDĂ – HEYD, 2015; KAISER – WINGER 2015; KOLEDIN *et al.* 2020; PREDĂ-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020). Archaeological research conducted in the past decade has considerably increased both the quantity and quality of information in terms of secure mound stratigraphy, an important amount of  $^{14}\text{C}$  dates, bioanthropological determinations, etc. (HORVÁTH *et al.* 2013; FRÎNCULEASA – PREDĂ – HEYD 2015; KAISER – WINGER 2015; ALEXANDROV – KAISER 2016, FRÎNCULEASA *et al.* 2017; ALEXANDROV 2020).

However, it was not archaeological research that brought Marija Gimbutas right back into the spotlight, but the development of new methods in archaeogenetics. The paper published by W. Haak and his team in *Nature* in 2015 seemed to confirm her theory in her own words, using the term “massive migration” in the title (HAAK *et al.* 2015). A similar study by M. Allentoft and colleagues supported the results obtained by Haak’s team (ALLENTOFT *et al.* 2015). The new publications arose various reactions. Some scholars enthusiastically embraced the new method, new concepts are being introduced and a new kind of archaeological language seems to find its way to publications (KRISTIANSEN 2014; KRISTIANSEN *et al.* 2017; ANTHONY 2021). Others signalled the shortcomings of the ways in which archaeological concepts were used in the interpretation of genetic data (VANDER LINDEN 2016; KLEJN 2017; HEYD 2017; FURHOLT 2018; 2019). Ancient DNA studies brought migration back as a main research topic and many scholars stressed the lack of theoretical approaches in archaeology regarding migration as a process (BURMEISTER 2017a). The very formula of “massive migration” was once again brought into question (FURHOLT 2018).

In her earlier publications Gimbutas described the Yamnaya migration as a “massive invasion that wiped out the Baden culture of central Europe and led to the extermination of the Old European strongholds in the Aegean” (GIMBUTAS 1977, 309). Only in her later articles did she change that vision for a less violent one, talking about a “massive infiltration which caused drastic changes in the ethnic configurations of Europe” (GIMBUTAS 1991, 384; 1993, 213). Interestingly, immediately following the publication of the new aDNA results, the archaeological discourse returned to her original vision of Yamnaya individuals being violent murderers and causing population turnovers (HAAK *et al.* 2015; BARRAS 2019). Kristiansen and colleagues advanced the hypothesis of an initial migration of young men forming warrior youth bands, abducting women and engaging in conflict with local men (KRISTIANSEN *et al.* 2017).

Since 2015 aDNA studies have revealed an increasing data complexity. In the initial publication steppe ancestry (initially called Yamnaya) was modelled as a mixture of EHG (Eastern Hunter-Gatherer) and a Near Eastern-related population later defined as CHG (Caucasus Hunter-Gatherer) (HAAK *et al.* 2015; JONES *et al.* 2015; ANTHONY 2019a, 29). A later study by Mathieson and colleagues published in 2018 found evidence for northwestern-Anatolian-Neolithic-related (also labelled AF-Anatolian Farmer) ancestry in Yamnaya-associated individuals, which was further confirmed by a study from Wang and colleagues in 2019 (MATHIESON *et al.* 2018, 199; *fig. 2*; WANG *et al.* 2019). The authors of the latter study found that Yamnaya individuals showed 10–18% Anatolian farmer ancestry likely derived from Globular Amphorae and/or late Trypillia groups (ANTHONY 2019a, 32; WANG *et al.* 2019, 9). One of the samples analysed by Mathieson’s team showing a significant amount of steppe ancestry came from Mednikarovo (Bulgaria), mound 2, grave 1 (MATHIESON *et al.* 2018; *fig. 2*). The feature was the primary

grave of the mound, containing an individual lying supine with flexed legs, arms along the body and ochre over and around the skull (*Fig. 7.4*) (PANAYOTOV – ALEXANDROV 1995, 88, *fig. 6*).

The absolute chronology of graves showing typical characteristics of the Yamnaya ritual in Southeastern Europe is now secured by a consistent number of  $^{14}\text{C}$  dates and has been divided into several phases (FRÎNCULEASA *et al.* 2017, 118). The oldest date from the very end of the 4<sup>th</sup> millennium BC and the first century of the 3<sup>rd</sup> millennium BC. Their presence is visible in different regions of the steppe such as Muntenia, the Hungarian Plain, and even reached south of the Balkan Mountains (HORVÁTH *et al.* 2013; KAISER – WINGER 2015; FRÎNCULEASA *et al.* 2017). The next phase, in which most of the  $^{14}\text{C}$  dates fall, covered the interval roughly between 2850–2600 cal BC (FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA *et al.* 2017), while latest graves, also showing a change in burial ritual to the side-crouched position of the individuals and the predominance of secondary burials in already existing mounds, were dated to about 2650–2450 cal BC (AILINCĂI *et al.* 2016; FRÎNCULEASA *et al.* 2017, 120).

Therefore, graves with a typical Yamnaya ritual lasted for about 500 years in the region. In this interval kurgans keep on being raised or only used, however, one should not assume that all the individuals buried beneath them account for migrants coming from the steppe. Some graves might belong to locals who adopted the steppe burial ritual. A hint in this direction is given by feature 3/mound 5 of Beli Breyag, which contained two individuals oriented westwards, one lying supine with raised knees and the other slightly crouched on the left side (*Fig. 7.3*) (ALEXANDROV – GALABOVA – ATANASSOVA-TIMEVA 2016, 154, *fig. 3*; ALEXANDROV 2020, 151, *tab. 2*). Samples analysed for these individuals (Bul 6 and Bul 8) showed the predominant northwestern-Anatolian-Neolithic-related ancestry (MATHIESON *et al.* 2018; *fig. 2*, Supplementary material page 5). Furthermore, the study of Mathieson and colleagues stated that Bronze Age individuals in the Balkans had about 30% (confidence interval: 26–35%) steppe-related ancestry, but the Early Bronze Age individuals showed least of it and the highest proportions were actually encountered in Late Bronze Age individuals (MATHIESON *et al.* 2018, 200). These results, although incipient, do not support a scenario in which the locals were “wiped out” following the Yamnaya migration. A particularly violent lifestyle would also result in violence-related injuries visible in the skeletal remains<sup>11</sup> (FURHOLT 2021). For the time being, there is no osteological study encompassing all individuals buried in kurgans in the region, however, individual site reports do not attest a remarkable presence of traumatic injuries. On the other hand, interactions are visible in the archaeological record in the form of local pots and ornaments present in kurgan burials as well as ochre and typical Yamnaya spiral hair rings documented in flat burials (PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 96; FRÎNCULEASA *et al.* 2020a). An isotopic study of the Sárretudvari-Órhalom kurgan revealed a complex scenario of kurgan occupation in the second quarter of the 3<sup>rd</sup> millennium BC, by communities originating in the Apuseni Mountains that were engaged in seasonal transhumance (GERLING *et al.* 2012).

This brief presentation already speaks against a single-event “wave of migration” as envisioned by Gimbutas and in favour of a multi-phased process.  $^{14}\text{C}$  dates suggest an initial phase of exploration (or scouting) at the end of the 4<sup>th</sup> and beginning of the 3<sup>rd</sup> millennium BC, followed by a more consistent occupation of the region in the next centuries and the dissolution towards the middle of the same millennium (FRÎNCULEASA – PREDA – HEYD 2015, 84; ANTHONY 2021, 13). Only a handful of samples of individuals buried in kurgans in this region have been analysed and published in genetic and isotopic studies, while several more are under study. The initial migration of the Yamnaya groups into the steppe-like areas of Southeastern Europe and its regional impact is still a largely unknown process. The wider continental impact is also going through a process of re-evaluation given that the Yamnaya might not be the single source of steppe ancestry in individuals associated with the central European Corded

<sup>11</sup> As an example we mention the study of skeletal remains of Pazyryk warriors of the 1<sup>st</sup> millennium BC in the Mongolian Altai (JORDANA *et al.* 2009).



Ware, as had been previously suggested (HAAK *et al.* 2015; FURHOLT 2021). In M. Gimbutas' view, the Kurgans arriving in Greece at the beginning of the 3rd millennium BC were descendants of Baden-Vucedol populations, which were a product of the Indo-Europeanization process of the second migration wave (GIMBUTAS 1993, 215). A recent aDNA study does not support this hypothesis for the moment, as samples from individuals dated to the beginning of the 3rd millennium BC showed they derive ancestry mainly from Neolithic farmers, and Pontic-Caspian Steppe-like gene flow reached the Aegean later, in the second half of the 3rd millennium BC (CLEMENTE *et al.* 2021).

### III. Discussion

The aim of this paper was to revisit the theory of Marija Gimbutas about the three waves of migration from the steppe from the perspective of current archaeological research. The topic is, of course, very complex and it would require a much more detailed analysis. This study can only hope to open/spark a discussion and further inquiries into the more and more complex archaeological and genetic data to which we currently have access. Given the fast publication pace of new excavations, aDNA, and isotope studies, our current knowledge will probably be significantly altered in the next years. Marija Gimbutas defined the waves of migration as single events involving the movement of large populations. In a recent article, David Anthony already noted that the use of the word wave, meaning something that “sweeps across the beach as a brief event and randomly washes over non-ocean space, invading the space of the terrestrial life but without knowledge, planning, goals, or direction – a purely mechanical motion” is instructive of the simplistic way M. Gimbutas perceived migrations (ANTHONY 2021, 3). It also suggests that she did not differentiate between the triggers of the three supposed migrations, but saw them as a mere repetition of the same mechanism. She did not explain why and how these migrations from the steppe happened (ANTHONY 2021, 4).

However, from the archaeological record very briefly presented above we can reasonably infer that, spanning two millennia from 4500 to 2500 BC, interactions between the Lower Danube and Balkan region, on the one hand, and the steppes, on the other, unfolded quite differently. The concept of waves of migrations only obscures the diversity of mobility forms taking place. Each of the three periods that indeed shows the intensification of contacts need to be evaluated in their own particular context in order to grasp the processes that produced the respective archaeological record. In the second half of the 5th millennium BC interactions most likely involved the actual mobility of special categories of people, high status individuals building exchange networks specialised in trading exotic and prestige goods between regions. During the last third of the 4th millennium BC, the occurrence of objects and burial practices of steppe origins at the Lower Danube does not seem to involve massive population movements, but cultural transmission processes. Nonetheless, the movement of groups of people did take place, as happened at the end of the 4th and beginning of the 3rd millennium BC when Yamnaya burials appear in the same region. However, even in this case migration seen as a single episode of movement of a large population needs to be nuanced in the context of the growing number of available <sup>14</sup>C dates that give a certain time depth to this process.

For all these periods one also needs to consider the various directions of mobility, what comes from the steppes and into Southeastern Europe and the other way round, what goes back into the steppes (HEYD 2016, 64). Studying the archaeological record can provide information about the circulation of raw materials or finished objects between regions. New aDNA studies brought another dimension, that

of gene flow<sup>12</sup>, already evidenced starting with the 5<sup>th</sup> millennium BC. However, the relation between the biological ancestry and identity of the individuals should not be assumed, but investigated, as proven by the several examples mentioned above.

To conclude, we should try to answer the question from which the paper started in the first place: was Marija Gimbutas right? The answer requires more than just yes or no. Marija Gimbutas was quite intuitive, a quality she considered essential to any archaeologist, in recognising three periods of more intense interactions between people inhabiting the steppe and those inhabiting what she called the *Old Europe*, the second half of the 5<sup>th</sup> millennium BC, the last third of the 4<sup>th</sup> millennium BC and the first half of the 3<sup>rd</sup> millennium BC, and in this respect she was right. She also had an impressive synthesis capacity and her waves of migration scenario covered the entire European continent. However, this approach caused an oversimplification of interpretations and prevented her from recognizing the specificity of the archaeological record that she used to build each of her “waves”. Therefore, in this respect she was not right, there were not three waves of migration from the steppes, but more complex processes of individual or group mobility, admixture and cultural transmission, and we have only started to unveil how they happened.

### Acknowledgements

This paper was written with the support of the ERC Advanced project 788616: The Yamnaya Impact on Prehistoric Europe (YMPACT).

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<sup>12</sup> David Anthony recently introduced the concept of mating networks that he defined as “genetically linked populations that shared a distinctive group of genetic traits as determined by ancient DNA (aDNA) analyzed across whole genomes, such that individuals from that chronological period and part of the world can confidently be assigned to one mating network rather than another” (ANTHONY 2019b, 176).



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## **PART #2**

**Interactions south of the Carpathians and along the Danube river**



# **Burial mounds in the Lower Danube region – From the international to the local and the other way round**

ALIN FRÎNCULEASA

*Steppe people do not migrate, the steppe carries them*

## **Abstract**

*Prehistoric burial mounds never enjoyed a special attention from the Romanian archaeological research, they were rather of secondary importance. A small number of tumuli were investigated during the first half of the 20th century, most of them perfunctorily published after a long time period. Interest in their research slightly increased at the beginning of the communist regime (during the 1950s), a period of development and look up to the research methodology of the Soviet archaeology. Although the topic could have been ideologically loaded, it did not reach a significant level. Furthermore, the implementation of the Soviet methodology used for excavating tumuli, i.e. the use of mechanised means, was not successful in Romania. Given the absence or monotony of grave goods, this type of archaeological site was not attractive in terms of scientific and museum heritage. The idea that excavating a burial mound is costly in relation to the expected results maintained including beyond the collapse of the Communist regime. The relation between tumuli, migration and the phenomenon of Indo-Europeanization was also not regarded as a topic of major interest for the archaeology north of the Danube. Therefore, the research of a relatively large number of tumuli in northern Muntenia in the past few years seems unusual and at the same time creates a discomfort regarding the real impact of the results beyond the studied area. We managed to open a window to a well-defined region, however it is still difficult to say whether the insights provided are representative of a whole or we are just in the middle of a cultural setting having a rather local impact. At the same time, we are wondering if through this slot we can perceive a whole world whose limits do not end with the steppe. In the end, we reduce everything to what we see through this open window to the inside and only then can we dare to look the other way round, inside outwards.*

**Key words:** pre-Yamnaya, Yamnaya, Lower Danube, 4<sup>th</sup>–3<sup>rd</sup> millennia BC

## **Introduction: The Yamnaya north of the Lower Danube**

Having emerged in the steppe landscape after the collapse of *Old Europe*, tumular burials of the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC have for a long time been included in the group of *ochre graves*, an approach which has not yet completely disappeared. The three-fold chronology established in the early 20<sup>th</sup> century by Russian archaeology, namely the Yamnaya, the Katacombnya, and the Srubnaya (KAISER 2013, 201–203, table 1), lasted throughout almost the entire century. Due to the reassessment of the North-Pontic tumular phenomenon and the contemporary cultural framework by scholars such as Y. Rassamakin, I. Manzura, S. Ivanova, V. Dergachev, etc., a new dynamic was conferred to the tumular phenomenon. Its connection to local cultural developments has started to completely change the perspective on the importance of the North-Pontic world in understanding the evolution of human communities on the Lower Danube



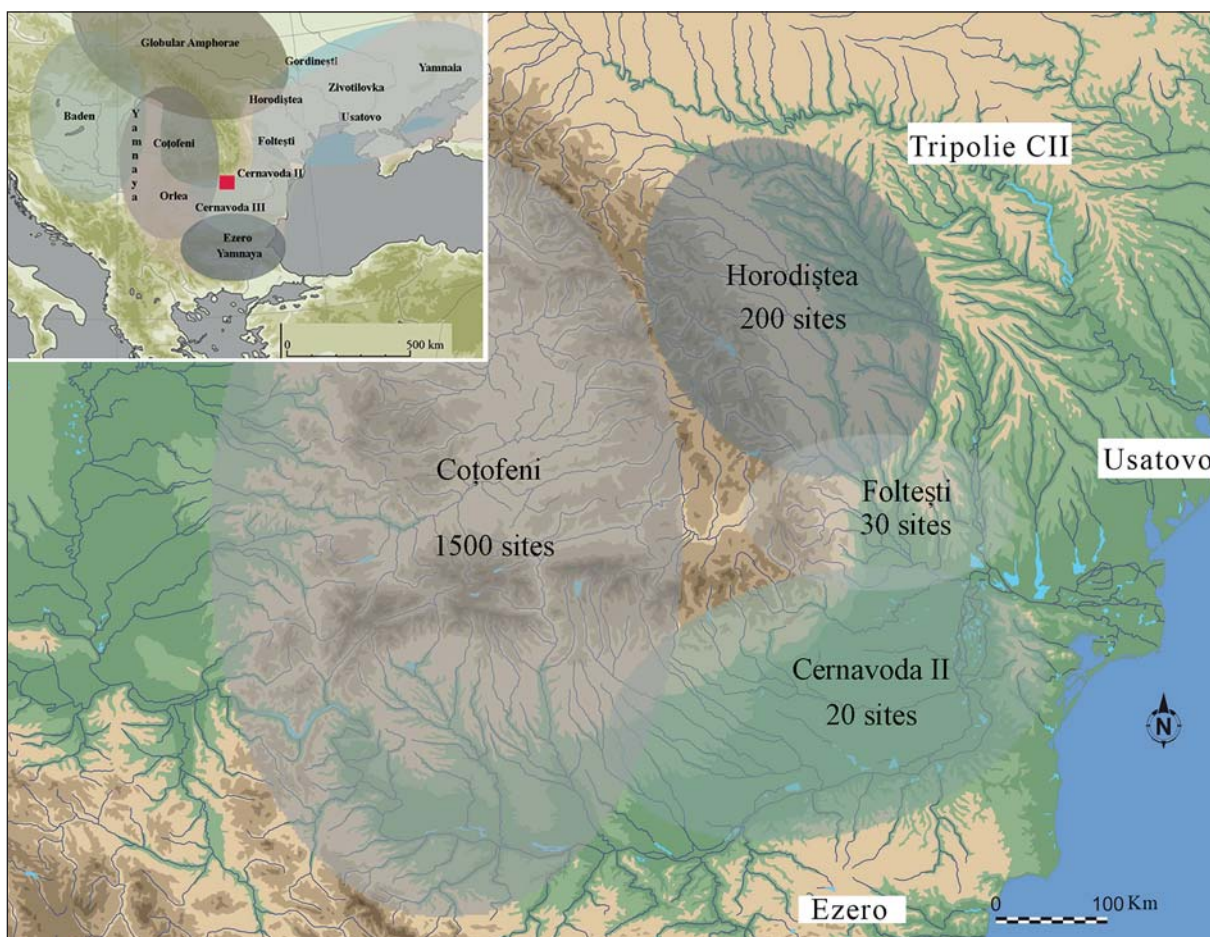


Fig. 1. The cultural dynamic on the Lower Danube and the West-Pontic area in the last quarter of the 4<sup>th</sup> millennium BC

(Fig. 1). Various stages, cultural aspects, and local groups have been defined and organised according to a consistent set of characteristics, which cover a chronological period of over a millennium. In the West-Pontic region, the Skelya culture (Novodanilovka-Suvorovo) emerged starting with the last third of the 5<sup>th</sup> millennium BC, followed by the Cernavodă I/Lower Mikhailovka, Usatovo, Zhivotilovka-Volchansk in the next millennium (RASSAMAKIN 1994; 1999; ANTHONY 2007; 2010; MANZURA 2016; 2020). After the first contacts in the 5<sup>th</sup> millennium BC (ANTHONY 2007), these manifestations intersected in the Lower Danube region, a world still preserving the imprint of *Old Europe*, namely the Cucuteni culture (with various local groups) (DUMITROAIA 2000; BURTĂNESCU 2002; IVANOVA – TOSCHEV 2015; SÎRBU – KRÓL – HEGHEA 2020) as well as the Cernavodă I (MANZURA 1999), Cernavodă II (FRÎNCULEASA 2020b) and Coțofeni cultures (DIACONESCU 2020; KOLEDIN *et al.* 2020; FRÎNCULEASA 2020a). The Yamnaya, Katacombnya, Mnogovalikovaya/Babino followed in the 3<sup>rd</sup> millennium BC, in a diachronic evolution, with short periods of coexistence (RASSAMAKIN 1999; LITVYNENKO 2013; IVANOVA, S. 2013; IVANOVA – TOSCHEV 2015).

In the last third of the 4<sup>th</sup> millennium BC, the West-Pontic area and the Lower Danube were found within a phenomenon that was taking shape supra-regionally and was spreading further, towards the south and west of Europe. A distinct occurrence is the earth tumulus in which one encounters characteristics and particularities related to the burial ritual and local cultural traditions. The tumulus

marks a reinterpretation of the access to the world of the dead, and also represents the landmark of a reconfiguration of the social framework (FRÎNCULEASA 2020a). A number of prestigious goods, such as metal or stone weapons, ornaments made of shell or metal (silver, copper), as well as cord-decorated pottery occur, (re)distributed over long distances/wide areas. One should also add the domestication of horses and the appearance of the wagon that seem to be the driving forces behind a previously unknown dynamic, and that allowed a faster dissemination of ideas and innovations. The steppe becomes smaller, the horizon is no longer lacking any landmarks once the Carpathians are visible. A series of reference-elements define the period and, at the same time, provide a perspective of what the model of local evolution and connections, interactions might represent. Some elements point to social status, others are part of the burial ritual, in which one may perceive the presence of local traditions or possibly of some that were foreign to the already existing cultural environment. In many cases, these characteristics, or rather the goods found in some graves, settlements or isolated, help one outline a world crossing the Balkans, reaching the Aegean, then Anatolia, and westward, beyond the Carpathian Basin, coming into contact with Central Europe. At the same time, the gene flow of steppe ancestry reached most of Western Europe.

### **Pre-Yamnaya – local or transregional characteristics and landmarks**

Used to mark the chronological interval within which Eneolithic steppe cultures preceding the Yamnaya phenomenon in the North-Pontic area developed (RASSAMAKIN 1994; 1999), the term pre-Yamnaya is employed to point to a horizon of tumular graves previous to the Yamnaya ones in the West-Pontic area (HORVÁTH *et al.* 2013; FRÎNCULEASA – PREDA – HEYD 2015; KOLEDIN *et al.* 2020). For the Budzhak steppe region some authors have proposed the Nerushayska/Budzhak culture (KLEYN 2017, 197), an approach followed by other scholars as well (IVANOVA, S. 2013, 86), or the concept of a local variant of the Yamnaya culture (RASSAMAKIN 1994; DERGACEV 1994, 126). Therefore, a Proto-Budzhak stage was defined that would include the cultural manifestations underlying the Yamnaya/Budzhak culture/group (IVANOVA 2015). If the pre-Yamnaya concept has a strictly chronological meaning in the east, encompassing a series of cultural/funerary groups such as Skelya, Kvityana, Dereivka, Lower Mikhailovka, Usatovo, Zhivotilovka-Volchansk, etc. (RASSAMAKIN 1994; 1999), west of the Prut River it becomes a problematic concept. Although a number of post-Cucuteni B-Trypillia CI/Cernavodă I/Cernavodă III cultural traditions, such as Erbiceni, Horodiștea, Foltești, Coțofeni, Cernavodă II, Ezero A, Baden have been outlined (*Fig. 1*) (NIKOLOVA 1999; BURTĂNESCU 2002; KRAUSS *et al.* 2016; ALEXANDROV 2018a; DIACONESCU 2020; FRÎNCULEASA 2020a; 2020b), the occurrence of artefacts typical of these cultural manifestations in tumular burials has been generally explained through the concept of local cultural import in an allochthonous funerary context.

The term Yamnaya/Pit-Grave designates a funerary phenomenon with a solid identity, which has a transcontinental occurrence, from the Caucasus as far as the Hungarian Plain. Taking Yamnaya as a chronological mark, the pre-Yamnaya term defines a horizon that includes various cultural manifestations and traditions, going back to the 5<sup>th</sup> millennium BC (RASSAMAKIN 1994; 1999). In the second half of the following millennium, a series of funerary groups preceding the Yamnaya burials emerge within some cultural manifestations with traditions in the Eneolithic cultural environment. In fact, the pre-Yamnaya horizon has both a chronological and a cultural connotation and appears to be well crystallised in the Lower Danube region in the last third of the 4<sup>th</sup> millennium BC. Beyond the local cultural traditions, the pre-Yamnaya funerary horizon is a dynamic, somewhat heterogeneous ensemble, with complex (local or transregional) burial ritual and grave goods, including elements that initially precede and later on

become part of the Yamnaya phenomenon (pastoralism, tumulus, rectangular pit with wooden cover, inhumation, ochre, hair rings, etc.). Essentially, these are staged phenomena, the former rooted in the local cultural environment influenced by the North-Pontic world, while the latter a well-established North-Pontic group that, at a certain point, came out of its womb and flew out to the east and west, intersected/coexisted with the former and influenced each another. This interaction was to re-establish local societies on different foundations.

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In the second half of the 4<sup>th</sup> millennium BC, the extra- and intra-Carpathian areas experienced different demographic dynamics. While the East-Carpathian (Erbiceni, Horodiştea, Folteşti or Trypillia CII) and intra-Carpathian (Coţofeni) areas are characterised by numerous settlements (CIUGUDEAN 2000; DUMITROAIA 2000; BURTĂNESCU 2002), the South-Carpathian one (Cernavodă II), most exposed to the Danube, seems to be rather discreetly occupied by human communities (FRÎNCULEASA 2020b). At the same time, the extra-Carpathian landscape is completed by many tumuli rising into the horizon in the flat land, which naturally continues here the West-Pontic steppe (BURTĂNESCU 2002; MOTZOI-CHICIDEANU 2011). There are two worlds in this area, one local and the other North-Pontic, which intersect and influence each other. The cultural dynamics, as we know it, is actually the mirror of this relationship. As if to emphasise it even more, one can notice the presence of flat graves, which chronologically and chorologically coexist with the tumular ones (FRÎNCULEASA 2020b), as well as the occurrence of cremation graves – in tumuli or flat burials (NIKOLOVA 1995, 274; DIACONESCU – TINCU 2016; KOLEDIN *et al.* 2020), the latter being rather connected with the Coţofeni cultural environment (NIKOLOVA 1995, 274; ALEXANDROV 2011, 317; DIACONESCU 2020, 42–43).

Absolute dates, which are no longer unusual occurrences, have also become relevant (HORVÁTH *et al.* 2013; FRÎNCULEASA – PREDA – HEYD 2015, 53; KAISER – WINGER 2015; FRÎNCULEASA *et al.* 2017a, 2018; 2019a; 2019b; KOLEDIN *et al.* 2020) and clearly define this chronological phase (FRÎNCULEASA 2019; 2020a; 2020b).

The cultural setting and contact chronology can also be decoded by studying the stratigraphy of the tumuli, correlated with the occurrence of various ritual elements in graves, such as the position of the dead (including orientation), or specific grave goods. There are three main coexisting positions in which the body was laid in the pit, namely side-crouched, extended supine and supine with raised knees (RASSAMAKIN 2013, 116). The side-crouched position had connections to the Lower Mikhailovka tradition (RASSAMAKIN 1994; 1999; 2013), whereas the extended supine was connected to the post Mariupol/Stog horizon or the Kvityana culture (RASSAMAKIN 1994; 2000; 2013; MANZURA 2010). North of the Lower Danube, this position occurs less frequently in tumular graves (Suharu, Vităneşti, Corlăteni, Holboca, Radovanu), possibly in flat ones (Brăiliţa), which points to a rather secondary ritual, that was nevertheless long-lasting, covering the second half of the 4<sup>th</sup> millennium BC and the first part of the 3<sup>rd</sup> millennium BC (FRÎNCULEASA – MIREA – TROHANI 2017, 87–88). The third position, supine with raised knees, was about to represent the mark of the Yamnaya ideology that prevailed in the first half of the 3<sup>rd</sup> millennium BC in the steppes between the Caucasus and the Hungarian Plain (HEYD 2011). Of the three above-mentioned positions, the side-crouched one is, along with the tumulus, the main feature of the funerary ritual in the second half of the 4<sup>th</sup> millennium BC (FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA – MIREA – TROHANI 2017).

Stratigraphic situations of graves containing individuals lying in side-crouched position that were overlapped by ones with individuals lying supine with folded and raised lower limbs are also encountered



in the entire West-Pontic area, north and south of the Lower Danube, as far as the Hungarian Plain (FRÎNCULEASA *et al.* 2013; 2017a, 115–116; FRÎNCULEASA – PREDA – HEYD 2015). For example, in the *Prahova area*, graves with the dead lying in side-crouched position, which may be assigned to the chronological horizon preceding the Yamnaya phenomenon, were found in almost half of the 30 investigated tumuli (FRÎNCULEASA *et al.* 2019a, 61).

Other characteristics of the analysed time frame are the presence of the stone rings surrounding the primary burials, the collective graves, the post-mortem manipulation of bones (FRÎNCULEASA 2020a), the complexity and diversity of funerary inventories. The stone rings present in Maykop-Novosvobodnaya burials (KORENEVSKIY 2010) bring one closer to Usatovo funerary traditions (RASSAMAKIN 2011, 303), but are also encountered in Baden cemeteries (SACHSSE 2010). Such structures occur both north (FRÎNCULEASA – PREDA – HEYD 2015, 75) and south of the Danube (ALEXANDROV 2011, 317). The grave goods include items that define the local imprint but are also the result of cultural relations/interactions covering wide areas. There are three main categories: pottery, weaponry (copper, stone, and flint) and ornaments (silver, copper, shell, bone, and clay). As regards pottery, some graves contain vessels typical of Trypillia CII groups (BRUDIU 2003), or some that may be attributed to the Cernavodă II-Foltești II cultural complex (BURTĂNESCU 2002, 395; ALEXANDROV – KAISER 2016, 361; FRÎNCULEASA 2020b); however, there are also graves with vessels typical of the Coțofeni culture (FRÎNCULEASA 2020a). Among the metal items, we should mention the flanged axes, the spectacle-shaped pendants, torques, the hair rings and also the tubular pearls or the multispiral *Saltaleoni*, modelled in copper (FRÎNCULEASA *et al.* 2013; FRÎNCULEASA – PREDA – HEYD 2015; PREDA 2015; FRÎNCULEASA 2020a). Although shaft-hole axes occur in hoards in the Lower Danube region (HANSEN 2014), they are found in tumular graves north of the Black Sea (HANSEN 2014, 255; KLOCHKO 2017; 2019). Moreover, the presence of such weapons as stone axes, flanged axes in pre-Yamnaya (tumular or flat) graves is an indication of the message conveyed by the insertion of this symbol in funerary contexts (FRÎNCULEASA 2020b). We should also mention the metal daggers in tumular or flat graves (Pietrele, Durankulak, Smyadovo, Kamen) (VAJSOV 2002; CHOHADZIEV – MIHAYLOVA 2014; HANSEN 2014; DIMITROVA 2018), a situation also encountered in Usatovo or Maykop burials (IVANOVA, M. 2013, 95 ff.; MANZURA 2016, 64; 2020, 78).

In this period, though not numerous, flat graves are also attested, containing individuals laid in side-crouched, more rarely supine extended positions, such as those of Răcăciuni, Brad, Grumezoaia, Vișani, Râșești, Suceava in the eastern Carpathian area or those of Brăilița, Lișcoteanca, Largu, Râmnicelu, Stoicani, Cireșu, Gherăseni, Grădiște, Sarichioi, Pietrele, to the south (FRÎNCULEASA 2020b). Flat graves with side-crouched deceased can also be found south of the Danube, at Lîga (MERKYTE *et al.* 2005, 146–147; MERKYTE 2007, 36), Sabrano (HRISTOVA – UZUNOV 2012), Smyadovo (2014), Dzhulyunitsa (MATHIESON *et al.* 2018, 6) or Jijila (AILINCĂI *et al.* 2020), possibly some cremation ones related to the Coțofeni culture (NIKOLOVA 1995, 274; ALEXANDROV 2011, 317).

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The relation of local cultures with the tumular funerary world covers the entire north Danubian region under study. The period experienced a series of pottery modelling traditions, crucial to shaping the local cultural framework (Cucuteni = painted, Coțofeni = incised/imprinted and Cernavodă II = notched) (Figs 2–3) (DUMITROAIA 2000; BURTĂNESCU 2002; CIUGUDEAN 2000; FRÎNCULEASA 2020a; 2020b), among which the cord-decoration technique originating in the Pontic area finds its place (KOTOVA 2010). A Cernavodă II-Foltești II cultural episode unfolded during the last quarter of the 4<sup>th</sup>

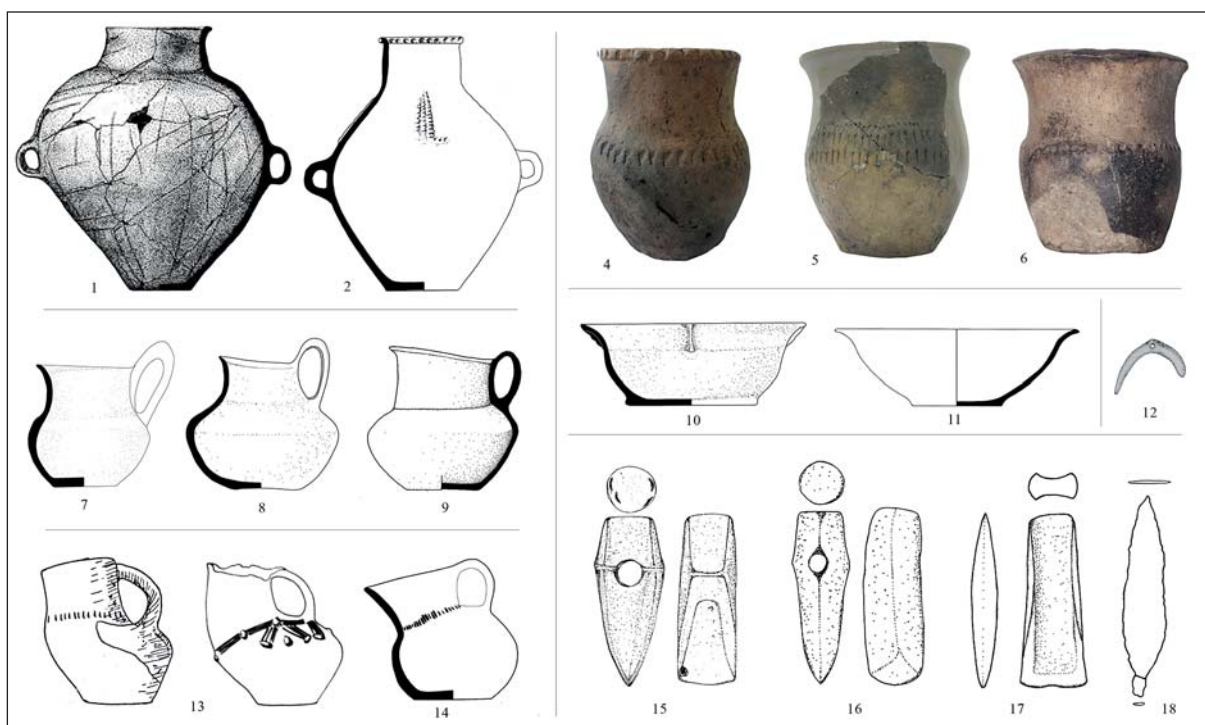


Fig. 2. Selected examples of cultural elements dating to the second half of the 4<sup>th</sup> millennium, found in graves or settlements: pottery (1–11, 13–14), stone axes (Ploiești, Coșereni) (15–16), flanged axe (Tohani) (17), dagger (Smyadovo) (18), personal ornament (Sarichioi) (12)

millennium BC, occurring outside the Carpathian arch (Moldavia, Muntenia, and Dobrudja). Some of its elements spread even beyond the area of intersection with Zhivotilovka-Volchansk and Usatovo funerary environments. The settlements with inconsistent archaeological deposits as well as tumular graves with specific ritual (the dead lying in side-crouched position) are typical (FRÎNCULEASA 2020b).

The Cernavodă II (-Foltești II) culture developed in an area that was configured as an intermediate one, where the West-Pontic steppe was in contact with the eastern periphery of the *Carpathian Basin*, an area open to interactions that shaped the development of local human communities (FRÎNCULEASA 2020a; FRÎNCULEASA *et al.* 2020a). As shown by the site dynamics, by the insubstantial archaeological layers, by the characteristics of occupations, by the artefacts present in settlements and graves (Figs 2–3), one may consider a significant degree of mobility of Cernavodă II (-Foltești II) communities (FRÎNCULEASA 2020b). This is the legacy of a direct or indirect experience of almost a millennium, generated by the intersection between local communities (or that became local) (PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 97) and this typically North-Pontic steppe behaviour. The area inhabited/controlled by Cernavodă II (-Foltești II) communities appears as an extension of the West-Pontic area, also reaching the hilly areas outside the Carpathians. Furthermore, the Curvature of the Carpathians has communication paths with Transylvania, provided by rivers cutting access ways between Transylvania and Muntenia or Transylvania and Moldavia. The river network connects these areas to the Danube, an important landmark during prehistory as well (FRÎNCULEASA 2020b). Tumular burials in the Cernavodă II area share some elements with the Zhivotilovka-Volchansk group, such as the side-crouched position of the dead, the post-mortem manipulation of bones, grave goods, etc. West of the Prut, graves found at Vânători and Liești were assigned to the Zhivotilovka group (BURTĂNESCU 2002, 394; MANZURA 2016, fig. 1). In Grave 20 from Liești, a Cernavodă II vessel was associated with a Trypillia CII painted one



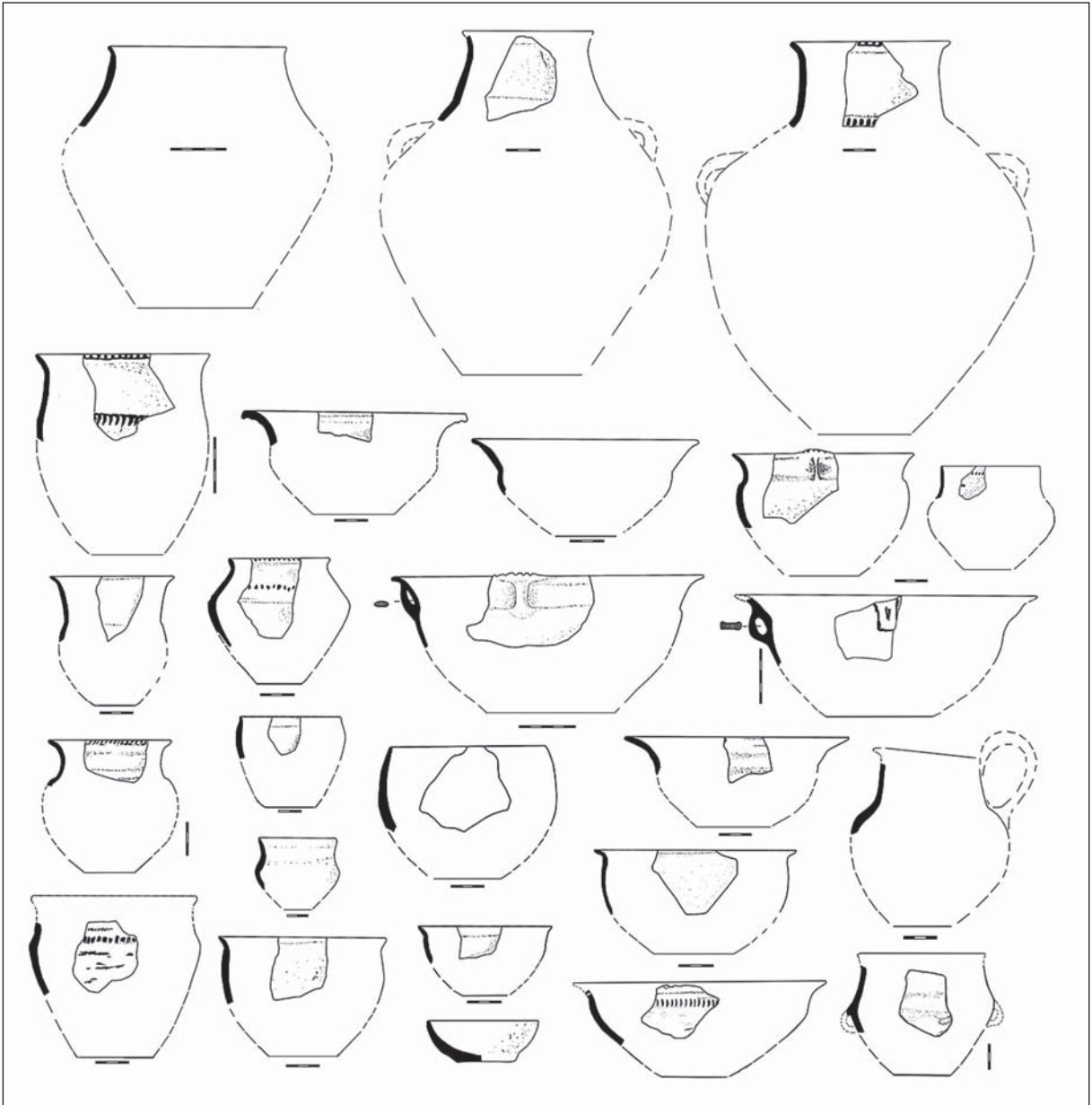


Fig. 3. Cernavodă II pottery from Târgșoru Nou

(BRUDIU 2003). In Dobrudja, we mention a flat grave (Gr. 2) from Sarichioi, containing an individual lying in a side-crouched position and accompanied by a semilunar pendant made of deer antler, likely a bone pin with a curved head (*Fig. 2.12*) (OBERLÄNDER-TÂRNOVEANU – OBERLÄNDER-TÂRNOVEANU 1979, fig. 6; VASILIU 2002, 146, Pl. 57/4; POPOVICI 2020, 525), an ornament that is typical of the Zhivotilovka funerary group (MANZURA 2016). The unpainted pottery also shows some common characteristics (MANZURA 2016, figs 6–7). Painted Cucuteni pottery is still encountered particularly in the northern area of the Prut-Dniester interfluvium (SÎRBU 2020) and west of the Prut as well, but it also occurs further south in this province, in flat or tumular graves at Grumezoaia, Liești, and Brăilița (FRÎNCULEASA 2020b).

The intersection of the tumular phenomenon with the local cultural environment is also highlighted by the presence of typical Coțofeni vessels in tumular graves at Suharu, Cârna, Coslogeni, Tarnava,

Taraklia, Bucova-Pusta IV, Silvașu de Jos, Ovchartsî-The big barrow (DIACONESCU 2020), in addition to those in northern Muntenia, namely Ariceștii-Rahtivani T.IV/Gr.3, T.VI/Gr.1 and Păulești T.IV/Gr.3 (FRÎNCULEASA 2020a). We also mention the presence of spectacle-shaped pendants in tumular graves at Ploiești-Triaș, Ariceștii-Rahtivani, Blejoi (Figs 10; 13), which may be related to the connection of this area with the intra-Carpathian one (PREDA 2015; FRÎNCULEASA *et al.* 2017a; 2020a; FRÎNCULEASA 2020a), due to the fact that decorations with the motif imitating these ornaments are found on Coțofeni pottery (POPA 2010; 2011; BARBU – BARBU – MARC 2016). Another artefact encountered in Transylvania as well, which is probably related to the Coțofeni cultural environment (WITTENBERGER – ROTEA 2015; CIUTĂ – TOTOIANU 2020), is the flanged axe, also present outside the Carpathians. Such items have been found in tumular graves (Ploiești, Păulești, Ariceștii-Rahtivani, Vădastra?) (PREDA-BĂLĂNICĂ *et al.* 2019) (Figs 10; 13), as fortuitous finds or in settlement areas (Retevoiești, Tohani, Blăjani, Tîrpești, Hlăpești, etc.) (Fig. 2.17). Similar axes dating from the same period also occur south of the Danube in the tumular grave of Kamen (DIMITROVA 2018; MODI *et al.* 2019, table 1) and in settlements such as those of Ovcharitsa and Ezero (NIKOLOVA 2002, 15; ALEXANDROV 2018b, 300, fig. 2). The occurrence of stone shaft-hole axes in Cernavodă II settlements is also significant in this context, such as the four axes from the Coșereni settlement (Fig. 2.16) (FRÎNCULEASA 2020b). Comparable axes dated to the same chronological horizon have been found in tumular graves such as those of Ciulnița, Ploiești (Fig. 2.15), Zebil, or in flat graves as that of Răcăciuni (FRÎNCULEASA *et al.* 2019a, 65).

### ***Ochre graves in Romania***

As they were unable to account for local cultures, prehistoric tumuli seemed to have been placed somewhere in the background by Romanian archaeological research.<sup>1</sup> Few tumuli were excavated before the 1950s (Plenița, Gurbănești, Seaca de Câmpie, Casimcea, Rast, Suharu de Jos, Ploiești, etc.); their investigation drew a certain interest at the beginning of the communist regime (the 1950s), a period of enthusiasm and connection to the methodology of Soviet archaeology (Holboca, Corlăteni, Glăvănești, Baia, Larga Jijiei, Valea Lupului, Smeeni, etc.) (COMȘA 1998; BURTĂNESCU 2002; TEODORESCU 2011).<sup>2</sup> Although the subject could have been ideologically charged (BERCIU 1960, 73), this approach did not reach a relevant level (FRÎNCULEASA 2020c, 61–62). Moreover, the implementation of the Soviet methodology of excavating tumuli, namely the use of mechanised means, a well-known approach in the eastern and south-Danubian area, was not successful in Romania (FRÎNCULEASA *et al.* 2017a, 27–28). As the archaeology of prehistory is one of objects, in the absence or blandness of grave goods, these archaeological sites did not become attractive for museums in terms of the potential heritage. The idea that the investigation of a prehistoric tumulus is uneconomical relative to the expected results has lingered, even after the collapse of the communist regime. The latest academic treatise approaches the tumular phenomenon only tangentially, when dealing with the Early Bronze Age or the Indo-European issue (VULPE 2001, 246). Also, with a few exceptions, the possible connection between tumuli, migration and the phenomenon of Indo-Europeanization has not been perceived as a topic of major interest in north-Danubian archaeology (GOGĂLTAN 2016). In fact, prehistoric tumular burials (replaced, in many cases, by the phrase *ochre graves*) are still dealt with as a stand-alone, non-homogenous group in terms of the burial ritual (BĂJENARU 2014, 132), or as a funerary fashion covering a long chronological segment (3500/3300–2400/2200 BC) (MOTZOI-CHICIDEANU 2011, 226).

<sup>1</sup> For an overview of the diachronic perspective regarding the research on tumuli in Romania, see BURTĂNESCU 2002; MOTZOI-CHICIDEANU 2011; SCHUSTER *et al.* 2011; FRÎNCULEASA *et al.* 2017a.

<sup>2</sup> Also see the doctoral thesis of P. Roman, *Grupa înmormântărilor cu ocră pe teritoriul RPR* (București, aprilie 1958), a work that has circulated in manuscript form (BURTĂNESCU 2002, 217).

***A light in Black – Movila Mare of Smeeni***

In this predictable course of research of these funerary monuments in Romania, the *Movila Mare* of Smeeni (Buzău), excavated by the archaeologist Victor Teodorescu, from the Regional History Museum – Ploiești, in 1959, still preserves its brilliance. The tumulus was about 4 m high and the base diameters were 55×49 m. 34 graves were found, all inhumations, 4 of which were destroyed by excavations carried out before the actual research started. Based on stratigraphic observations, some characteristics of the burial ritual and inventories, six stages of burials were established, the first two attributed to the Yamnaya communities, the third to catacomb graves, the fourth to the Middle Bronze Age, represented by the Tei culture (Fig. 4). The last two phases were attributed to the Sarmatians (2<sup>nd</sup>-3<sup>rd</sup> centuries A.D.) and to the 18<sup>th</sup> century. The results were initially published in a brief report showing the methodology and quality of the archaeological excavation (SIMACHE – TEODORESCU 1962). However, this research, which was way ahead of its time, did not become a model with an impact on the Romanian archaeological practice. Almost 60 years later, in the midst of the widely debated issue Yamnaya=migration=Indo-Europeans (HAAK *et al.* 2015; KRISTIANSEN *et al.* 2017; HEYD 2017; KLEYN 2017; KLEYN *et al.* 2017; FURHOLT 2018), it seemed timely to resume and extensively publish the Smeeni excavations. Due to the succession of burials, the inventory and ritual elements and anthropological data, the Smeeni tumulus has become an adequate analysis tool for understanding this funerary phenomenon specific to the 3<sup>rd</sup> millennium BC. At the same time, it is the most important case study on the vertical evolution of such a

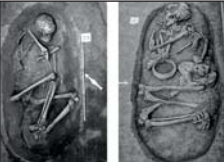




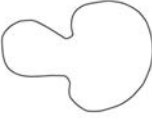
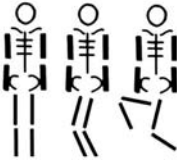


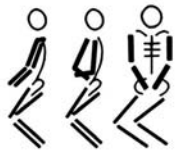

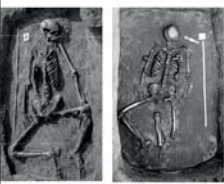



	IV Middle Bronze Age			 offerings	2100-1700 BC
	III Katakombnaya			no inventory — offerings	2550-2450 BC
	II Yamnaya			 ochre	2900/2850-2600 BC
	I			 ochre	≈ 3050-2900 BC
Cernavoda II culture					≈ 3300-3100 BC

Fig. 4. Smeeni - Movila Mare: ritual, inventory and chronology of burial stages

funerary complex. Prehistoric features have been republished in detail, the preserved bioanthropological material has been reanalysed and ten  $^{14}\text{C}$ -AMS dates have been performed (FRÎNCULEASA *et al.* 2017a).<sup>3</sup>

Table 1.  $^{14}\text{C}$ -AMS dates from Movila Mare of Smeeni

Lab ID	Feature	Age BP	Age calibrated BC		Mean	Stage
			Sigma 1 68.2% probability	Sigma 2 95.4% probability		
DeA-8817	<b>Grave 5</b> Yamnaya	<b>4357 ± 35</b>	3011 (68.2%) 2916 BC	3089 (7.9%) 3056 BC 3031 (87.5%) 2899 BC	2978 BC	<b>I</b>
DeA-7739	<b>Grave 15</b> Yamnaya	<b>4240 ± 54</b>	2912 (35.1%) 2860 BC 2890 (26.7%) 2755 BC 2720 (6.4%) 2704 BC	3009 (1.6%) 2983 BC 2937 (42.8%) 2831 BC 2821 (51.0%) 2632 BC	2817 BC	
DeA-7737	<b>Grave 16</b> Yamnaya	<b>4142 ± 30</b>	2864 (14.1%) 2834 BC 2818 (5.4%) 2806 BC 2760 (44.4%) 2662 BC 2648 (4.4%) 2636 BC	2875 (95.4%) 2622 BC	2742 BC	<b>II</b>
DeA-7735	<b>Grave 18</b> Yamnaya	<b>4126 ± 31</b>	2858 (20.2%) 2810 BC 2752 (13.2%) 2722 BC 2701 (34.8%) 2626 BC	2870 (26.1%) 2802 BC 2779 (69.3%) 2580 BC	2725 BC	
DeA-5392	<b>Grave 1</b> Katacombnya	<b>4008 ± 42</b>	2571 (47.2%) 2513 BC 2504 (21.0%) 2476 BC	2834 (1.3%) 2818 BC 2663 (0.9%) 2646 BC 2637 (93.2%) 2457 BC	2537 BC	<b>III</b>
DeA-5864	<b>Grave 23</b> Katacombnya	<b>4027 ± 31</b>	2576 (22.8%) 2550 BC 2537 (45.4%) 2491 BC	2623 (95.4%) 2472 BC	2544 BC	
DeA-5393	<b>Grave 27</b> Katacombnya	<b>4039 ± 42</b>	2620 (68.2%) 2488 BC	2848 (5.6%) 2813 BC 2692 (0.2%) 2689 BC 2679 (89.6%) 2468 BC	2579 BC	
DeA-12801	<b>Grave 28</b> Katacombnya	<b>4017 ± 29</b>	2572(53.5%)2512 BC 2502(14.7%)2489 BC	2618(1.6%)2610 BC 2582(93.8%)2471 BC	2533 BC	
DeA-10671	<b>Grave 7</b> Middle Bronze Age	<b>3494±31</b>	1879(13,0%)1860 BC 1854(55,2%)1771 BC	1899(93,7%)1741 BC 1711(1,7%)1700 BC	1818 BC	<b>IV</b>
DeA-14448	<b>Grave 25</b> Middle Bronze Age	<b>3651±28</b>	2117(12,5%)2098 BC 2039(55,7%)1966 BC	2135(24,3%)2079 BC 2063(55,2%)1941 BC	2028 BC	

According to the absolute dates (*Table 1*), all burial stages as they were identified and stratigraphically specified by the author of the archaeological excavation (*Fig. 4*) were confirmed, which points, once more, to the remarkable nature of this research:

1. The first stage, originating in the late 4<sup>th</sup> millennium BC, covers the beginning of the following millennium, being very close chronologically to the Yamnaya phenomenon in the West-Pontic area, and related to the presence of the first Yamnaya elements in this region and further south (KAISER – WINGER 2015) and west (DIACONESCU 2020), in Serbia (KOLEDIN *et al.* 2020) or Hungary (HORVÁTH *et al.* 2013).

2. The second stage is roughly placed between 2900/2850 and 2650 BC. It is an interval for which Gr. 18 is defining through its ritual position, or possibly Gr.13 through the *askos* pot, which may be a good chronological indicator and also a sign of a certain kind of interaction between the steppe environment

<sup>3</sup> Eight were initially published; in the meantime, two others have been established, for stages III and IV respectively.



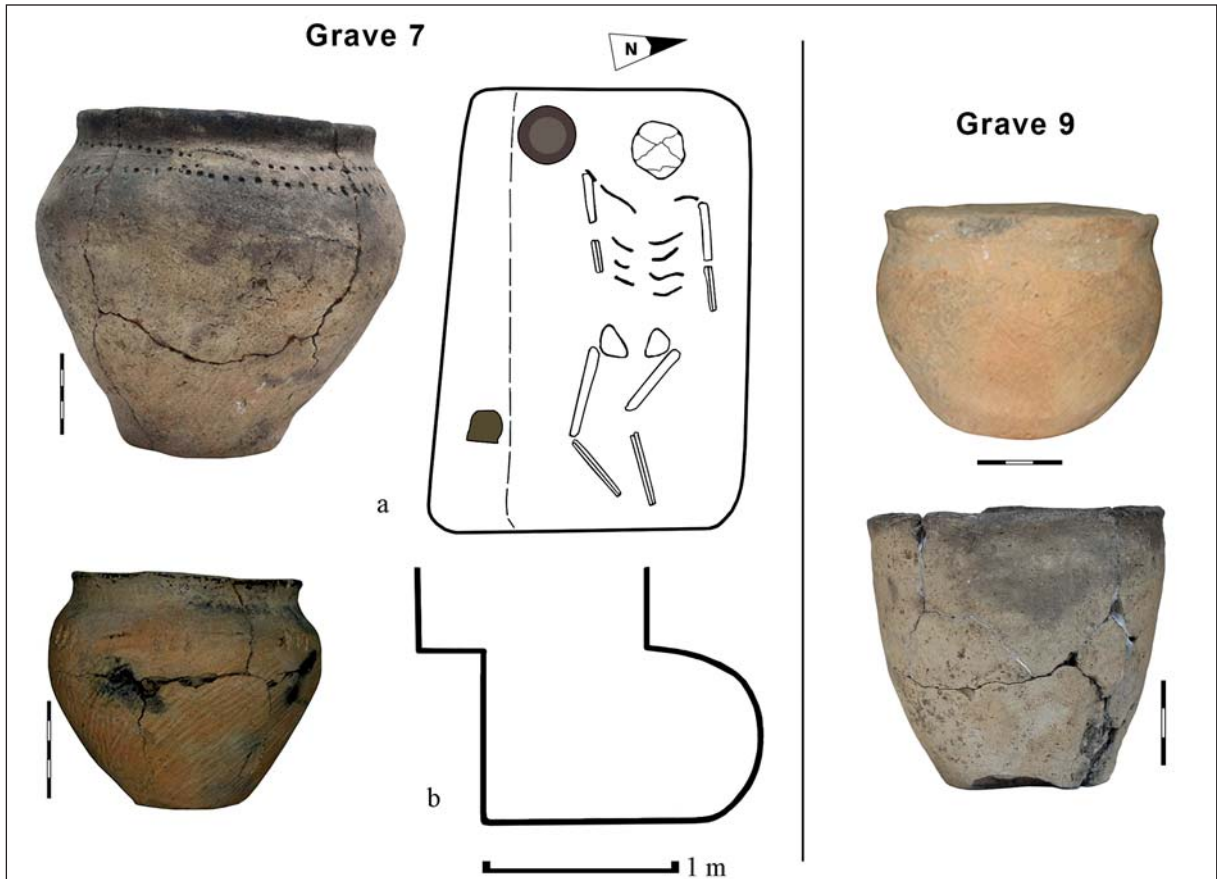


Fig. 5. Sudiți – catacomb grave 7 and vessels found in grave 9

and local elements, defined by late Cernavodă II (FRÎNCULEASA 2020b), Mlăjet-Sânzieni (ROMAN 1986) or Zimnicea finds (NIKOLOVA 1999).

3. As regards the catacomb graves, the four dates from Smeeni are up until now the only ones available. Katacombnaya burials are rather discreet occurrences at the Lower Danube. At the same time, as absolute dates show, this is a stage of coexistence with the Yamnaya burials. The element that can be considered a marker of identity is the catacomb, however, if one analyses Gr.7 of Sudiți the persistence of elements typical of the Yamnaya ritual can be noted (Fig. 5). Nevertheless, the vessels present in the two graves from Sudiți are rather specific to Katacombnaya burials (Fig. 5).

4. The absolute dates in the case of Gr. 7 and Gr. 9, assigned to the fourth stage (Table 1), outline a chronological interval in which the north of the Lower Danube appears fragmented between the Monteoru culture, developing in the hilly area of Muntenia, partly the centre and south of Moldavia (CONSTANTINESCU 2020), and the Tei communities inhabiting the plain of Muntenia (LEAHU 2003). Furthermore, in the plain area of Muntenia, two burial rituals coexisted. One is characterised by flat burials (Fig. 6.B), whose pottery and geographical framework outline the Tei culture. The other is marked by secondary burials in tumuli located rather in the east of Muntenia (Fig. 6.A), outside the Tei cultural area. Sometimes, the inventories of these graves include vessels that can be connected to the Tei pottery typology (Baldovinești, Roșiori, Smeeni). Monteoru vessels placed in tumular graves (Bolotești, Matca, Grădiștea) are scarce in Muntenia (Ciulnița, Ploiești) but somewhat more present in the south of Moldavia (FRÎNCULEASA 2020d, 137). Therefore, there are signs of interactions between what one



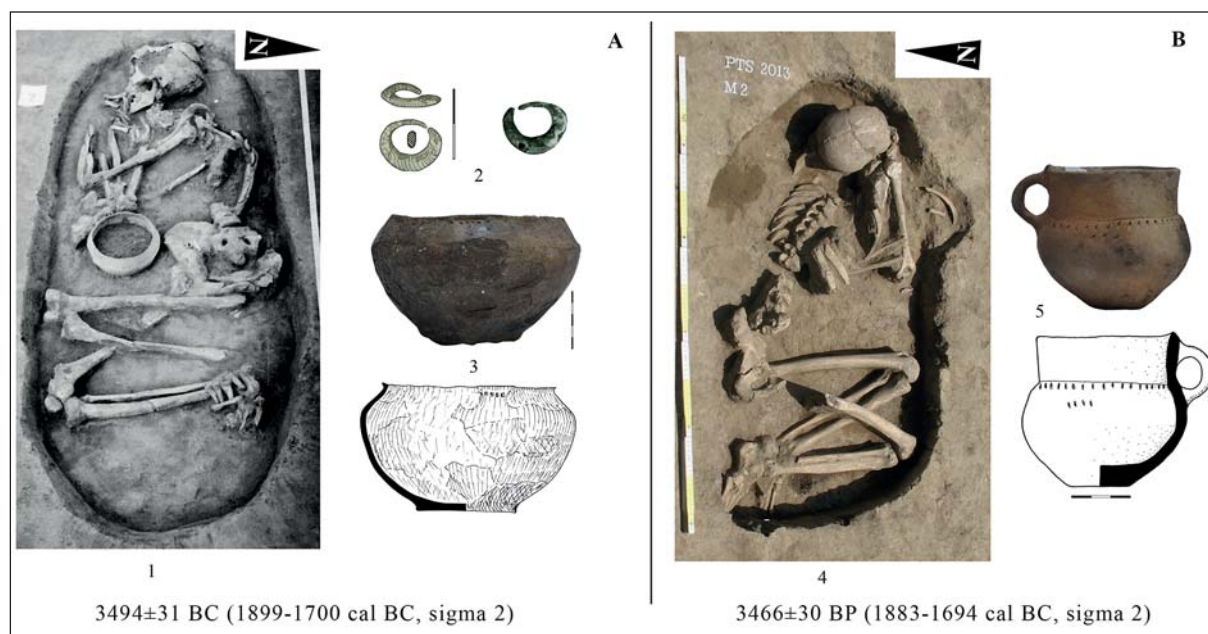


Fig. 6. Middle Bronze Age tumular (A) or flat (B) graves at Smeeni (A) and Pietrosu (B)

might call the local cultural environment, on the one hand, and elements with origins in the North-West-Pontic space, on the other hand. The latter continued to manifest their presence at the Lower Danube, an area lying on the periphery of the steppe. A group of graves different from that attributed to the Tei communities seems to have taken shape in the area dominated by the Mnogovalikovaya (LYTVYNNENKO 2013) and later the Srubnaya (SAVA 1992) groups. Moreover, the isolated finds (1–2 graves), the absence of settlements point to mobility as a characteristic socio-economic element. In fact, this area still lives under the impact of these cultural manifestations of *steppe* origin (FRÎNCULEASA 2020d, 138).

The *Movila Mare* of Smeeni underwent a horizontal and vertical, including volumetric, evolution only during the first two burial stages. It is a behaviour assumed by those for whom this tumulus was the setting of the traditional funerary ritual. As regards the catacomb graves, the already raised tumulus was an important landmark, the relationship being not accidental, but within the boundaries of the typical ritual of those communities. During the Middle Bronze Age, the tumuli continued to be used as a place of burial for a population that seemed to be still connected to the funerary traditions typical of the steppe environment.

### ***The Prahova area – a decade of research***

The *Prahova area* is located north of the Romanian Plain, in the Prahova-Teleajen interfluvium, a region that has been distinctly shaped both geographically and in terms of the tumular funerary phenomenon (Fig. 7). The two rivers cross the Southern Carpathians, providing communications routes between the intra-Carpathian area and Muntentia over time (PREDĂ-BĂLĂNICĂ – FRÎNCULEASA – GARVĂN 2018, 178). More than 350 tumuli have been identified in the *Prahova area*, the northernmost ones going up along the Prahova as far as the area where this river has created a corridor through the Sub-Carpathian hills, near Câmpina (FRÎNCULEASA *et al.* 2017b; 2018, 77–78; FRÎNCULEASA 2020c, 43). The first tumuli in this area were investigated during World War II, during the works for the extension of the marshalling yard of Ploiești railway station (NESTOR 1943; 1944; COMȘA 1989). After 70 years of respite, the economic

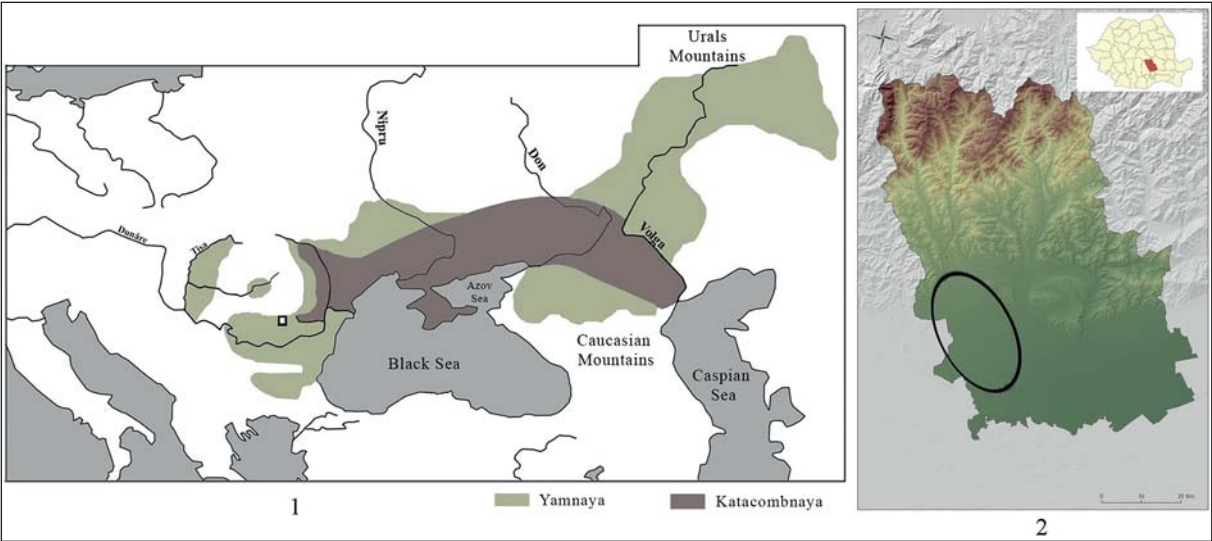


Fig. 7. The Yamnaya and Katakombnaya cultural area (1); location of the Prahova area (2)

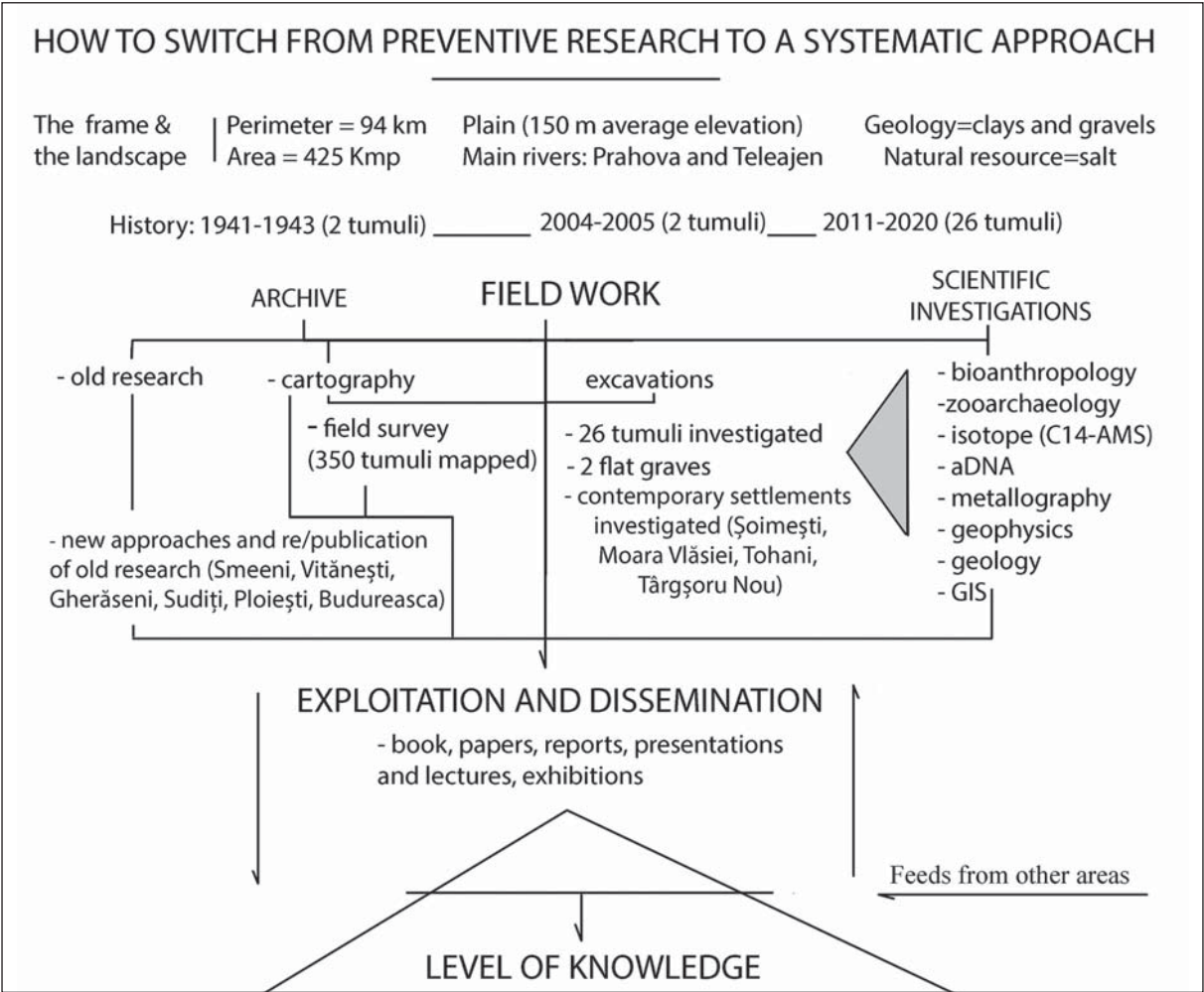


Fig. 8. Overview scheme regarding the research of tumuli in the Prahova area



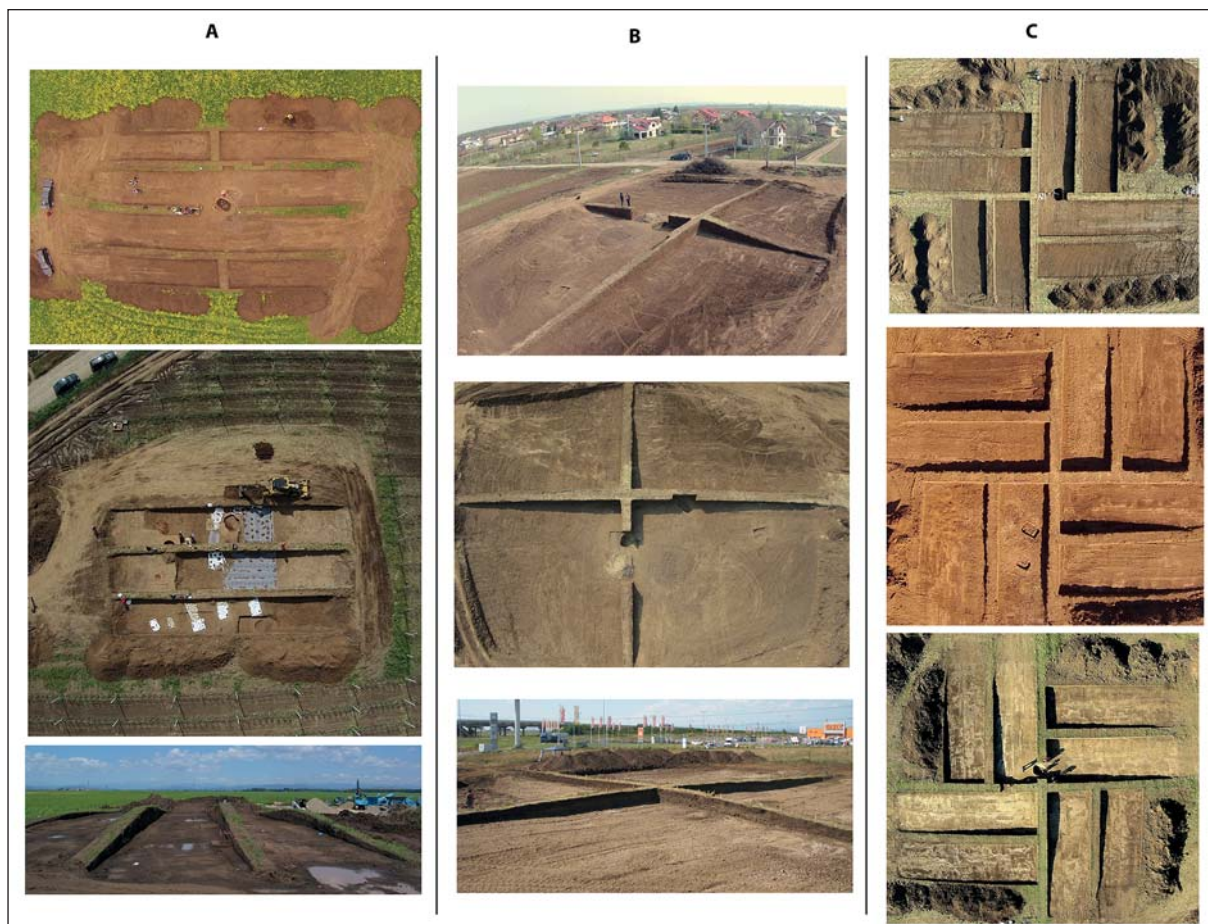


Fig. 9. Methods of excavation applied in the research of tumuli in the Prahova area

development of the area reopened and raised the issue of prehistoric tumuli at an unexpected level. A preventive research was turned into a systematic approach (Fig. 8) (FRÎNCULEASA *et al.* 2013; 2018; FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA 2020c), as the topic has been in a foreground position in the context in which the issue of the Indo-European migration associated with the presence of tumuli (GIMBUTAS 1979) became once again one of interest (FRÎNCULEASA 2019, 144), due to implications generated by palaeogenetic investigations (HEYD 2017; 2019).

The research of the prehistoric tumular funerary phenomenon has been a priority concern of a small group of archaeologists from the museum in Ploiești. Although the results are the fruit of investigations required by a favourable economic context, this *feedback* is not an accident. The research team has actively responded to a special economic situation, has aimed and insisted that these archaeological sites should be excavated and has raised administrative awareness about the potential of these funerary monuments. The archaeological excavation was only an element of visibility (even in the media), as it has been followed by multidisciplinary analyses (isotopic, anthropological, archaeozoological, geophysical, cartographic and GIS), the results being included in research projects that might provide other opportunities (genetic, isotopic) – approaches currently inaccessible to local funding. Furthermore, this research would not have become systematic if certain steps had not been constantly taken for more than a decade (surface investigations carried out in order to map and include the tumuli in the National Archaeological Repertory and on the plans of host-localities, visibility of research by publishing and



Fig. 10. Pre-Yamnaya graves in the Prahova area: simple, collective burials, post-mortem manipulation of bones; stone rings and funerary inventories

communicating the results in conferences or scientific journals). The research has also enabled us to develop methods of excavating these complex archaeological sites in a relatively short time (Fig. 9), with limited material and human logistics and at relatively low costs (FRÎNCULEASA *et al.* 2017a, 33–36).

The investigation of a relatively large number of tumuli over a short period of time in a well-defined area (FRÎNCULEASA *et al.* 2013, 24; 2014; 2018, 78; 2019a; 2019b; FRÎNCULEASA – PREDA – HEYD 2015) may have seemed unusual within the landscape of Romanian research and, moreover, it entailed an imbalance in terms of relating the results to the restricted studied region (FRÎNCULEASA *et al.* 2018, 78–79). When dealing with the issue of recently investigated prehistoric tumuli, there are few areas that can be compared to northern Muntenia. A solution to get out of this impasse/isolation was the re-evaluation of older research, which allowed us to expand the framework under analysis (FRÎNCULEASA 2011a; 2011b; FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA *et al.* 2017a; FRÎNCULEASA – MIREA – TROHANI 2017; GARVĂN – SIMALCSIK – FRÎNCULEASA 2018).

A number of 30 tumuli were investigated in the *Prahova area*, including the two found at Ploiești-Triaj (COMȘA 1989; FRÎNCULEASA *et al.* 2013), and almost 70 prehistoric graves were discovered inside them, with at least 100 individuals. Based on chronology, stratigraphy, absolute dates, ritual, grave goods, two distinct groups have been identified: a. pre-Yamnaya graves (3300–2900 BC) and b. Yamnaya graves (2950–2550 BC). The first group is characterised by the presence of small tumuli, no more than one





Fig. 11. Yamnaya graves in the Prahova area – ritual and inventory (male adult, subadult, female adult)

metre high, the (primary or secondary) placement of individuals (adults of both genders and subadults) in side-crouched position, in individual, double or collective graves, the post-mortem manipulation of bones, rectangular or oval pits, stone rings, rich and diverse grave goods (pottery, weapons, ornaments, tools) (Fig. 10). In graves there are weapons (displaying status), ornaments (displaying wealth and status), and pots (connecting to local, identity traditions). The grave goods, as well as the collective burials, the post-mortem manipulation of bones, are indicating the status and social position of the individuals, the presence of elite with strong family bonds, along with networks covering wide areas.

The Yamnaya group is very compact in terms of the ritual – rectangular pit, individuals lying supine, knees bent and raised, the presence of ochre in lumps or scattered over body parts. Graves belonged mainly to adult males. There was no pottery in the graves of adults, only personal ornaments such as hair rings and, exceptionally, shell beads, kaolin or copper (tubular or spiral), alongside ochre lumps, which is an element related to the Yamnaya burial standard. Primary burials of subadults as well as secondary ones are also relevant in this group, the latter having inventories (cord decorated pottery, silver or copper hair rings, ornaments made of the canines of domestic and wild animals) (FRÎNCULEASA 2019). Taking into account adult females graves, it is precisely their small number that becomes relevant (Fig. 11) (FRÎNCULEASA 2019, 145). As for the inventory elements present in these graves, a technological innovation not known until then is significant, namely the coating of silver with gold or copper with silver in ornaments (Fig. 12) (FRÎNCULEASA *et al.* 2019b, 44–45, fig. 4).



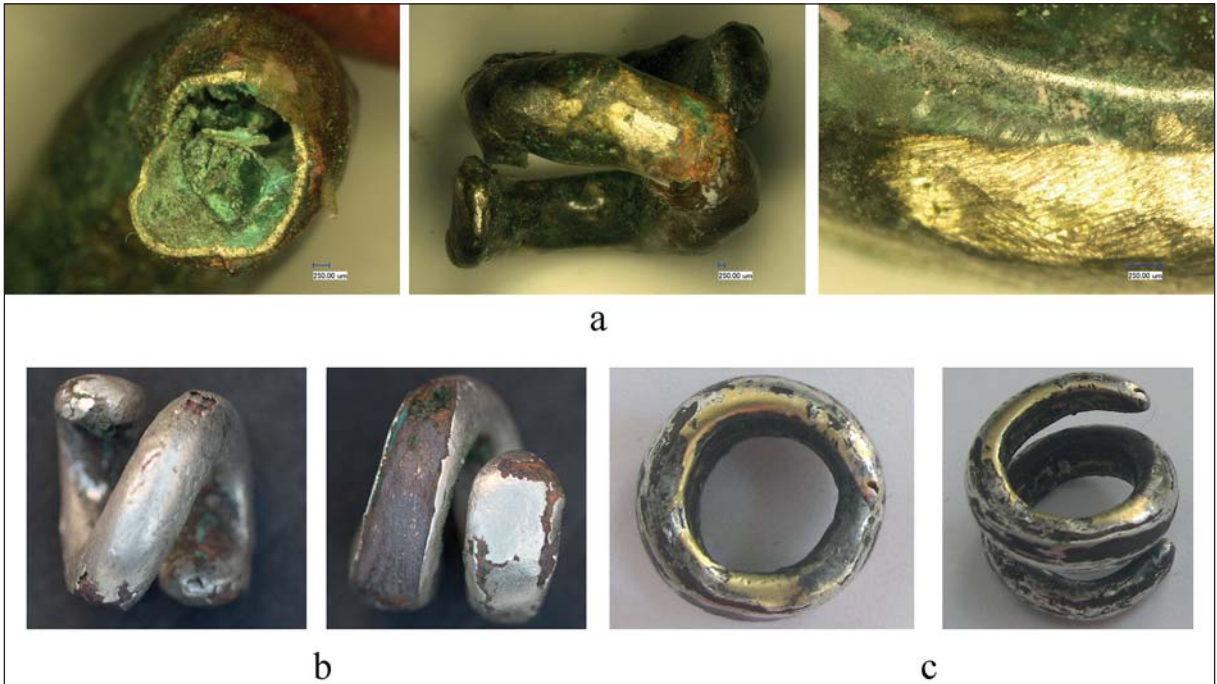


Fig. 12. Hair rings of copper coated with silver (a-b) or of silver coated with gold (c) found in Blejoi (a-b) and Ariceştii Rahtivani (c)

The stratigraphic and ritual situations have been confirmed by  $^{14}\text{C}$ -AMS dates. A few years ago, we would point out the small number of usable  $^{14}\text{C}$  dates, no more than 6, for the region north of the Lower Danube (FRÎNCULEASA – PREDA – HEYD 2015, 49). In a matter of years, we have performed over 75 absolute dates, around 60 of which in the *Prahova area* (graves and settlements), and the rest from neighbouring regions (Smeeni, Pietrosu, Moara Vlăsiei, Bucureşti, Vităneşti, Brăiliţa). They outline a chronological frame starting with the second half of the 4<sup>th</sup> millennium BC and reaching the beginning of the 2<sup>nd</sup> millennium BC. We have thus well covered the pre-Yamnaya, Yamnaya, Katakombnaya and even *Mnogovalikovaya* burials (Fig. 14). To this we should add the dates from Cernavodă II settlements (FRÎNCULEASA 2020b), those spanning the entire 3<sup>rd</sup> millennium BC (Late Cernavodă II, Glina-Schneckenberg, Early Monteoru /Odaia Turcului) as far as the beginning of the following one (Tei, Monteoru) (FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA *et al.* 2017a; 2019a; 2019b; 2020a; FRÎNCULEASA 2020a; 2020b; 2020c; 2020d).

The phenomenon of tumular burials at the Lower Danube cannot be completely understood if it is not related to the local cultural/archaeological context. Therefore, the investigation of tumuli has been complemented by the approach of contemporary settlements located in similar landscapes – the plain area (Moara Vlăsiei, Târgşoru Nou) (FRÎNCULEASA *et al.* 2015; FRÎNCULEASA 2020b), or completely different ones – the hilly area (Şoimeşti, Tohani) (FRÎNCULEASA *et al.* 2020a) (Fig. 8). Furthermore, we have initiated a tumulus research programme in the south-eastern part of Prahova County, which is important because this region appears as a westward extension of the *Movila Mare* – Smeeni area. The excavation of the tumulus in Boldeşti in 2019 (FRÎNCULEASA *et al.* 2020b), with many elements similar to that of Smeeni, is another important step towards understanding the Yamnaya funerary phenomenon beyond an intensively investigated micro-zone. Returning to Ploieşti-*Triaş*, the re-evaluation of the two tumuli excavated during the war summarizes everything that has been found in the *Prahova area* in the 30 recently investigated tumuli. Being rooted in a war incident, the Ploieşti-*Triaş* investigations offer the



Fig. 13. Ploiești-Triaș, overview of reference ritual elements: body position of individuals (a, c, d), post-mortem body manipulation (b), adults and subadults, grave goods (1-2)

image of a missed opportunity. Despite such finds as pre-Yamnaya and Yamnaya graves, stratigraphic sequences and relevant ritual elements, inventory items, such as the flanged axes or the spectacle-shaped pendants which, until recently, remained unique in the tumular landscape, graves of subadults with specific inventories (cord decorated vessels, hair rings), the potential of this investigation has never been fully exploited (Fig. 13).

## Discussions

How can the *Prahova area* be included in the prehistoric tumular phenomenon? The first phase seems to have a local imprint generated by the proximity to and communication with the Carpathian Basin, as the area may be an intermediate one between the steppe world and the intra-Carpathian region. However, the tumular context is similar. One can find tumular or flat burials with rich and complex grave goods both in the West-Pontic area (Usatovo, Purcari, Alexandrovka) and the north or south Danubian one (Brăilița, Kamen, Smyadovo, Drazhevo) (FRÎNCULEASA *et al.* 2019a, 69), as well as in the Baden funerary environment (BONDÁR – RACZKY 2009; SACHSSE 2010; HORVÁTH *et al.* 2020). This concentration of graves with complex and rich inventories in such a small region as the one we called *Prahova area* seems for the moment to be a special situation. Moreover, the Yamnaya does not appear to have manifested itself differently here. Although there is a larger number of hair rings here (in about

15% of the graves) as compared to the entire area in which no more than 5% occur (PREDA 2015, 22; FRÎNCULEASA *et al.* 2019b, 46), this situation may be the result of the research stage or of a regional particularity, also noted south of the Danube (KAISER – WINGER 2015, 122). In fact, in the *Prahova area*, hair rings also occur in the pre-Yamnaya horizon in 6 graves/12 items, which is as yet unique north of the Danube (FRÎNCULEASA *et al.* 2019b, annex 2). Such items have been found in Bulgaria as well, in late 4<sup>th</sup> millennium BC graves at Smyadovo, Kamen, Dzhulyunitsa (CHOHADZIEV – MIHAYLOVA 2014; DIMITROVA 2018; MATHIESON *et al.* 2018, 6).

The research of the *Prahova area* becomes relevant to the immediate understanding of a micro-zone, but with results that may be extrapolated to a much wider space. We should notice that at the end of the 4<sup>th</sup> millennium BC tumular graves are examples of eccentricity, due to the richness of inventories, as against the austerity of Yamnaya graves that were to appear soon on the Lower Danube. Apart from the structure represented by the tumulus, the hair ring, the ochre, most grave goods present in pre-Yamnaya graves become exceptional occurrences with the advent of Yamnaya burials at the beginning of the 3<sup>rd</sup> millennium BC (FRÎNCULEASA 2019a). This may be the case of Gr. 5 of Drazhevo (Bulgaria), which is a collective grave with the deceased placed according to the Yamnaya ritual, with a rich inventory consisting of four vessels, six silver hair rings, an arsenical copper dagger (ILIEV – BAKARDZHIEV 2018, 327).

As this chronological segment preceding the Yamnaya phenomenon, taken out of a broader setting, takes shape, the local world revealing itself is one that began to adopt/assimilate eastern traditions. One finds the signs of two societies supposed to have had different socio-cultural foundations, but that intersected at a level that went beyond the mere economic contact. Then, there is the option of a migration from the east, which sharply influenced/changed the local cultural framework. For the time being, we opt for a history in which the east (and here we are considering the North-Pontic steppe and forest-steppe areas) interacts with the west, but this is not something new; it is a process whose roots are one thousand years old on the Lower Danube. The tumuli are present, but this is already part of the funerary landmarks of the age. Adjusting the funerary setting implies a deep change in the inner structure of society, a reconfiguration of the social structure that would completely change local history as it was at the end of the 5<sup>th</sup> millennium BC (ANTHONY 2010; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020). Classical Eneolithic communities had already come into contact with the steppe world, as revealed by the archaeological materials found (ANTHONY 2007; 2010) and by the genetic data recording the biological presence of steppe elements prior to the arrival of Yamnaya communities (MATHIESON *et al.* 2018; IMMEL *et al.* 2020). There is almost a millennium-old experience in this relationship between local communities and the steppe world. When the Yamnaya communities reached the Lower Danube in the early 3<sup>rd</sup> millennium BC, the bridges were stable, the paths were already known and the world was somewhat prepared.

During the period preceding the Yamnaya phenomenon, distinct funerary behaviours, such as the flat and tumular burials, the presence of inhumation and also of cremation (in tumuli), coexisted. This may point to the existence of a segment of local elite that used tumuli in the funeral ritual and had the authority of convincing the community to engage in the effort involved in raising a tumulus. The idea that the tumuli exclusively mark the presence here of a population that had come over from the steppes north of the Black Sea seems obsolete.

At the beginning of the 3<sup>rd</sup> millennium BC, following the course of the Danube, Yamnaya communities would make their way to the steppe landscape, which they claimed, place mounds on lands providing visibility to the funerary monument, require a social effort to raise these complex structures in which they generally buried adult males, but also subadults. In the case of Yamnaya burials, there are some elements that outline a socio-funerary supra-regional standard, such as the earth tumulus, the burial of male



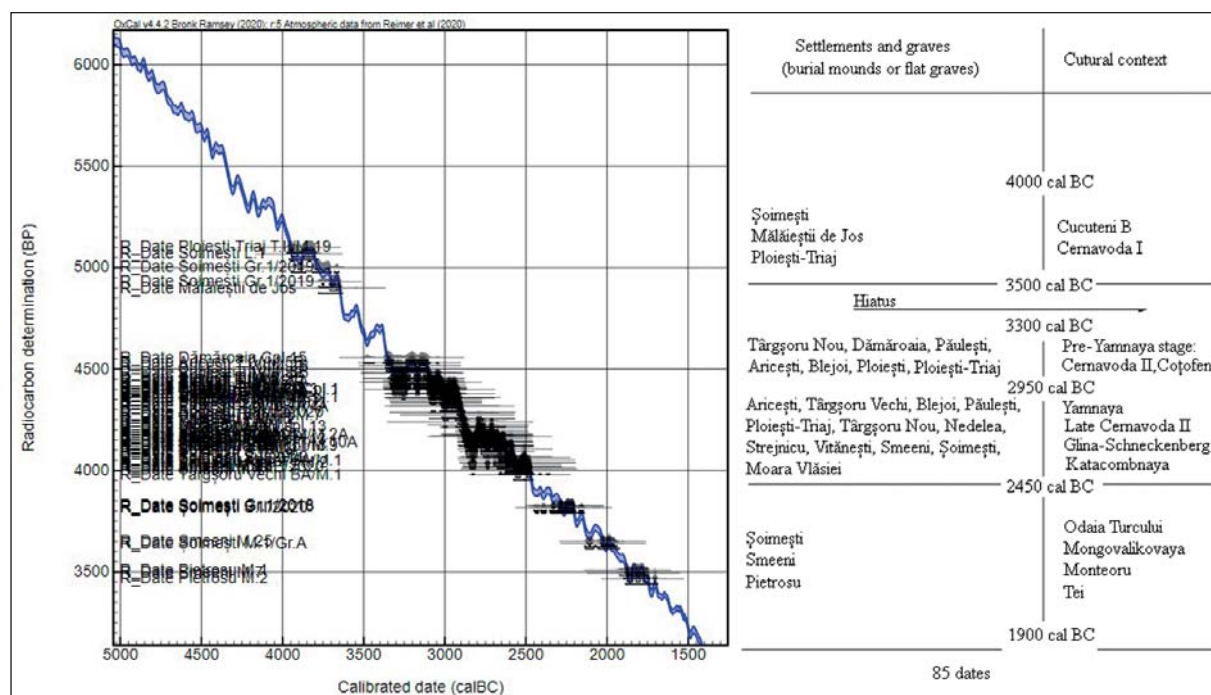


Fig. 14. Calibration curve of  $^{14}\text{C}$ -AMS dates on the Prahova area and marking of the Cucuteni B/Cernavodă I, pre-Yamnaya stages, Yamnaya, Katakombnaya, Mnogovalikovaya stage (a number of 87 dates have been added)

individuals in a specific position oriented on the west-east direction, the presence of an ochre lump near the body (shoulder or skull). Local cultures became less and less visible but did not disappear altogether. The impact appears to have been significant on newly formed local societies. After a short period of coexistence, the local elite seemed to have disappeared. Some cultural elements or those reflecting the status of the former elite would later be encountered in the hilly area of Muntenia (FRÎNCULEASA *et al.* 2020a) or even in Transylvania (CIUGUDEAN 1996; 2011; DIACONESCU 2020), natural areas which seemed to become at first a refuge, then one of the reservoirs that were to contribute to the resettlement of the local cultural framework. As the absolute dates and the local cultural framework show, there are three chronological episodes in the interaction with the Yamnaya:

- (3050/3000–2950/2900 BC) – is the episode of a small segment of the coexistence between the Yamnaya phenomenon and the local/pre-Yamnaya world; the Yamnaya would later prevail in the entire West-Pontic area. This onset occurred synchronously as far as the western (Hungary) (HORVÁTH *et al.* 2013), the southern (Bulgaria) (KAISER – WINGER 2015; ALEXANDROV – KAISER 2016) and the eastern boundaries (SHISHLINA 2008; SHISHLINA *et al.* 2014) of the evolution of the Yamnaya phenomenon.
- (2850–2650/2600 BC) – is the episode in which (inventory or ritual) elements with local imprint began to be encountered in Yamnaya graves. Late Cernavodă II-Foltești II settlements were found within a space that seemed under the Yamnaya control (FRÎNCULEASA 2020b).
- (2650/2600–2450 BC) – is the episode of coexistence with the *new wave* defined by catacomb (exclusively secondary) burials in the north-east of Muntenia and east of the Carpathians (FRÎNCULEASA *et al.* 2017a, 142). Moreover, local cultures started to prevail. Much of the area north of the Danube was occupied by Glina communities (BĂJENARU 1998; 2014), the one east of

the Carpathians by the Bogdănești-Aldești (BURTĂNESCU 2002), whereas the Livezile/Copăceni communities inhabited the intra-Carpathian space (CIUGUDEAN 1996; ROTEA *et al.* 2014).

## Conclusions

The Yamnaya has been treated as a transcontinental (funerary) phenomenon, the framework of a population migration that dramatically changed the genetic *package* (HAAK *et al.* 2015; ALLENTOF *et al.* 2015; MATHIESON *et al.* 2018), the social paradigm and the linguistic framework (KRISTIANSEN *et al.* 2017) in the west, also imposing its ideology (HEYD 2011; 2019) on a landscape that was mostly similar to that of origin (RACIMO *et al.* 2020). Through the Corded Ware and Bell Beaker cultures, it reached almost the entire West (HEYD 2017; 2019; FURHOLT 2018; 2019; SJÖGREN *et al.* 2020, 2), but it also returned east through the Fatyanovo culture (NORDQVIST – HEYD 2020, 19). It was a process that lasted almost a millennium. It was some kind of continuous but slow revolution and the phenomenon was a bit more complex, beyond the dissolution of an age, the overthrow of established social landmarks, the restoration of elites on different grounds, the approach of the environment in another paradigm, the provision of former communication axes and exchange networks or the tracing of new ones that became the support of interaction over large areas.

One of the driving forces of this socio-cultural transformation and readjustment may be ideological. The Yamnaya is considered to have imposed a new ideology, which created the premises for fundamental changes that would later influence the history of Western Europe (KRISTIANSEN *et al.* 2017; HEYD 2017). The Yamnaya goes as far as the area where the tumuli, with a very specific ritual, are in the picture. In this ideological colossus, every tumulus has a story, every grave is an event with a rather local impact. Sometimes the impact of these isolated events/facts may become more relevant, such as the spread of epidemics (RASMUSSEN *et al.* 2015), the gene flow (MATHIESON *et al.* 2018), the circulation of goods or ideas. It is here that archaeologists intervene, as they see the action beyond the item, establish the relevance of some elements that anchor the facts locally or transregionally.

Inevitably, at some point, in all this huge area, the regional dynamics of the Yamnaya phenomenon would lead to the emergence of centrifugal groups that would directly/indirectly produce local cultures around 2850/2750 BC. They also absorbed the remains of local manifestations which survived the impact/hard period during the first centuries of the 3<sup>rd</sup> millennium BC (FRÎNCULEASA 2020b). Around the middle of the same millennium, followed by the Katacombnya (somewhat more discreet and with a reduced occurrence on the Lower Danube) (FRÎNCULEASA *et al.* 2017a, 159; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 95), the Yamnaya phenomenon weakened and then disappeared in anonymity. The cultures flourishing afterwards would not claim to originate from the Yamnaya, although, as the isolated graves in the Romanian Plain suggest, the behaviour of a population with increasing mobility seemed to have carried on (FRÎNCULEASA 2020d), perhaps in parallel with the evolutions of local communities or of the ones that became local (PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 97).

But it is difficult to vouch for a *Pan-European revolution* due exclusively to the Yamnaya phenomenon (or to the Corded Ware – via Yamnaya). Furthermore, the Yamnaya topic seemed to be overexposed, which was also the result of the immediate interest – the issue of migration in Western Europe and the USA in a corrosive political approach. The issue was quickly embraced by the euphoria (or possibly the opportunism) of some slightly hasty researchers. The results of palaeogenetic investigations (sometimes doubled by isotopic ones) initially seemed to be used unilaterally, with a view to revealing the migration of a population that, having reached the heart of the continent, would forever change the foundations of *Old Europe*, with consequences visible in the core of today's western *European society*. At the same



time, the new genetic data foreshadow a paradigm shift (FURHOLT 2021) in which the impact of the Yamnaya (via Corded Ware) no longer seems so overwhelming (HAAK *et al.* 2015; KRISTIANSEN *et al.* 2017; HEYD 2017). Most likely, the Western debates will lose interest in the Yamnaya topic equally quickly as it has been set as a priority in recent years.

The Yamnaya tumuli are funerary monuments and monumental archaeology is one of elites. Naturally, the selection of the analysed material puts its stamp on interpretations and conclusions. One should not overlook the fact that outside/at the edge of the steppe the world seemed to have its own coordinates. Sometimes this edge is in the centre and does not necessarily function as an enclave in which politico-social coordinates are mixed, congruent or divergent – see the Carpathian Basin. This world was to be seen again in the foreground in the second half of the 3<sup>rd</sup> millennium BC, with the resettlement of local societies that would generate a series of well-defined cultures, in which the signs of the Yamnaya phenomenon appear to us (for the time being) rather scarce.

All these elements create a complex story, which has its roots in a series of events triggered by phenomena that occurred north of the Black Sea as early as the end of the 5<sup>th</sup> millennium BC, with episodes that were to continue with a certain constancy and intensity for several millennia. The local world, as it discreetly reveals itself to us now, is part of this story. The Yamnaya emerged on the Lower Danube and further on, as far as the Hungarian Plain, in an area in which, at the end of the 4<sup>th</sup> millennium BC and the beginning of the 3<sup>rd</sup> one, tumuli had already been present long enough to prevail and settle in the collective mentality, to pave the way for what was to come. *Old Europe* was rather prepared to become *New Europe*.

### Acknowledgements

I would like to thank Katia Moldoveanu for her assistance in the identification of several vessels found at Smeenî, which are part of the patrimony of the National Museum of Romanian History. I also thank Roxana Munteanu for allowing the mentioning of a flanged axe discovered in Blăjani (Buzău county).

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## Bronze Age graves at Jijila (Southeastern Romania)

SORIN-CRISTIAN AILINCĂI – MIHAI CONSTANTINESCU – ANDREEA DIMA –  
GABRIELA SAVA – FLORIAN MIHAIL – CRISTIAN MICU – MARIAN MOCANU –  
AUREL-DANIEL STĂNICĂ

### Abstract

*During the archaeological excavation in 2018–2019 in Jijila (SE Romania), a group of eight inhumation graves concentrated on a rather small area was researched.  $^{14}\text{C}$  dates made for graves no. 1, 2, 5–8 indicate a very long period of time separating the earliest and the latest burial. Graves no. 5, 7, and 8 (probably also 3) can be dated between the end of the 4<sup>th</sup> millennium BC and the beginning of the 3<sup>rd</sup> millennium BC, grave 1 was dated to the middle of the 3<sup>rd</sup> millennium BC, and graves no. 2 and 6 to the first part of the 2<sup>nd</sup> millennium BC.*

*The density of graves and their wide time span, covering a period of almost 1500 years, could suggest the existence of a burial mound. Despite this, we could not identify any traces of such a funerary structure. However, the practice of flat burials in a period from which thousands of mounds are still preserved is not a unique case at the Lower Danube. Unlike mounds, which can be easily identified in the landscape as funerary monuments, flat necropolises were usually discovered during research of sites dating from other periods, especially Eneolithic tell settlements. Due to the general lack of grave goods or any arrangements of stone or earth, these sites are practically almost impossible to identify only by surface research. These cemeteries were often located near water, on terraces or promontories visible from the surrounding areas. They probably followed the communication routes or areas exploited for various important resources, on the courses of rivers such as Ialomița, Buzău, and Călmățui. Many such discoveries were also identified on the Danube course. In this respect, we cannot fail to highlight the cemeteries from Brăilița, Orlovka and Isaccea located in the area of a crossing widely used throughout history.*

*Although many of the flat cemeteries known in the Early and Middle periods of the Lower Danube Bronze Age are known only by brief mentions in the literature, they seem to share a similar chronology with the burial mounds. The oldest burials date from the end of the Eneolithic period (Cernavodă I: ~ 3800–3500 BC) and the most recent seem to be contemporary with the Mnogovalikovaya horizon (~ 2200–1800 BC). The graves at Jijila show once again the importance of  $^{14}\text{C}$  dating. Without absolute dates it would have been almost impossible to assume such a large chronological distance between the eight graves. Even though in most cases we have little chronological information, we can see that human communities have used these places as burial grounds for very long periods (over 1500 years).*

**Key words:** Lower Danube, Bronze Age, flat burials, red ochre, Cernavodă II, Yamnaya, Mnogovalikovaya

### Introduction

While conducting rescue excavations ahead of the construction of a bridge over the Danube River, north of Brăila, the archaeological team researched the site of Jijila-La grădini, situated 500 m north of Jijila,



*Fig. 1. Jijila–La grădini. Aerial view of the archaeological site in 2018–2019.  
Black arrows indicate Bronze Age graves*

on the loess terrace bordering the Danube flood land (*Fig. 1*), bordered by the Măcin Mountains and the neighbouring hills to the east and southeast.

The site is mentioned in the archaeological literature in relation to surface findings ascribed to the Eneolithic and Early Iron Age (COMȘA 1953, 751; CAROZZA – BEM – MICU 2011, 32–33), and to a small Roman fortification mentioned by Pamfil Polonic at the end of the 19<sup>th</sup> century, now destroyed (COMȘA 1953, 748, 751).

Archaeological research at Jijila-*La grădini* site started in the fall of 2018 and ended in May 2019, encompassing an area of approximately 10.000 sq. m. In the southern sector alone, 135 archaeological structures were identified and researched, ascribed to the Bronze Age and the Early Roman Age. Amongst them, there was a small group of inhumations (AILINCĂI *et al.* 2020) (*Fig. 1*), which make the object of this paper.

### **Description of the graves**

The oldest finds at the Jijila site consist of a group of eight graves, which could be ascribed to the Early and Middle Bronze Age. Some of them were destroyed by more recent archaeological structures,



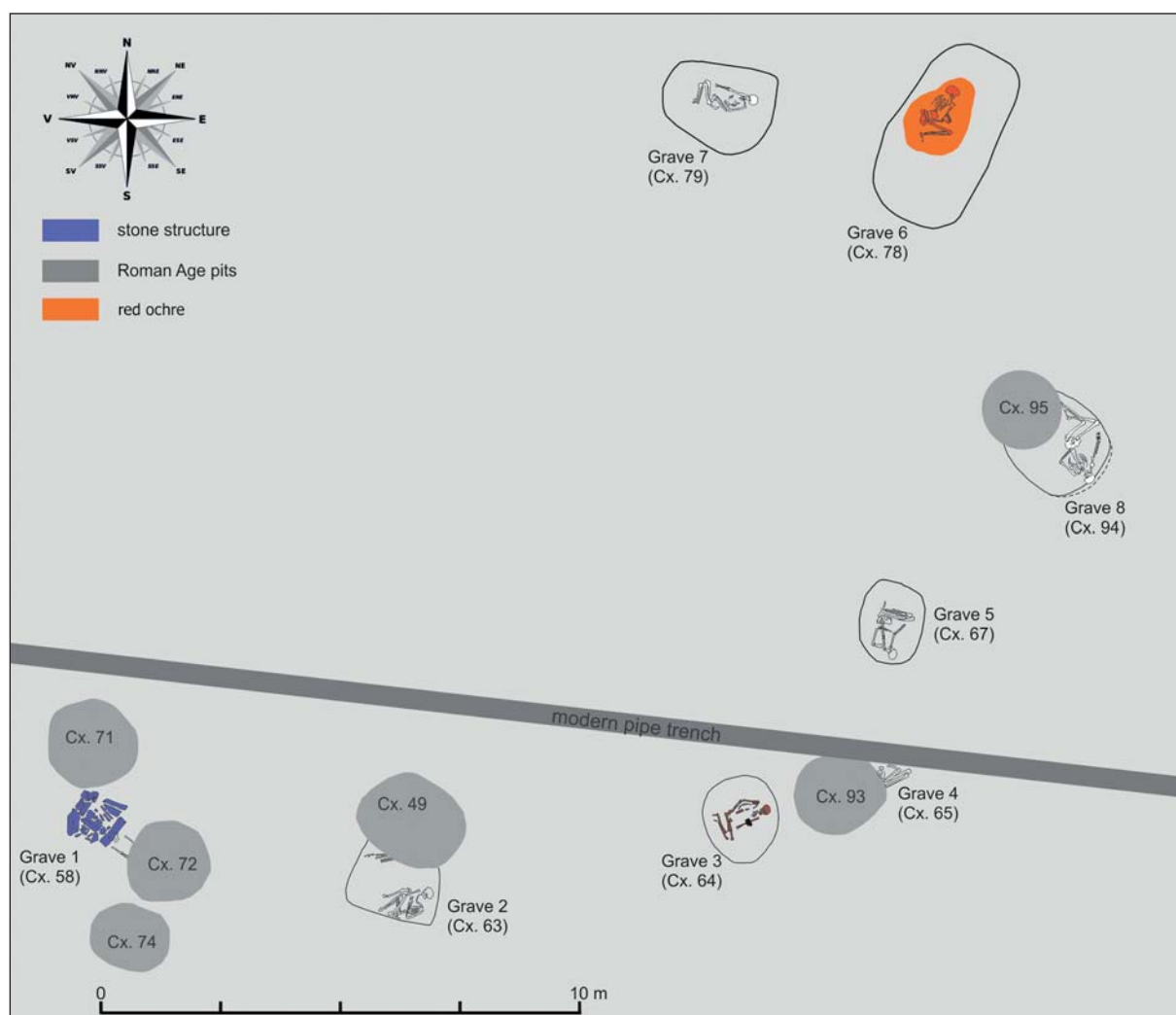


Fig. 2. Jijila–La grădini. General plan of the graves

especially from the Roman Age (2<sup>nd</sup> century AD). As visible in the excavation plan, the graves are disposed in a semicircle (Figs 1–2).

The archaeological structures were numbered according to the order of investigation, as follows:

*Grave no. 1 (Cx. 58)* – in the first stage, several rocks were found under the vegetal layer. After removing the parts already damaged by farming, an approximately square-shaped structure (L = 1.25 m) became visible. The sides of the structure were marked with elongated rock pieces of approximately rectangular shape, laid horizontally, while smaller stones were found in the interior. Among the stones, several atypical pottery fragments and bone fragments were found. The stones had been laid directly on the loess. The southeastern side of the stone structure partially overlapped the skull of a human skeleton that had been partially destroyed by a pit dug during the Roman Age (Cx. 72). The contour of the pit could not be identified. The skeleton (*individual 1*) consisted only of the skull, both forearms and parts of the right cubitus and radius. Based on the position of the bones found *in situ*, it is possible to assume the body had been deposited in supine position, NW-SE oriented (Figs 2; 3.1).

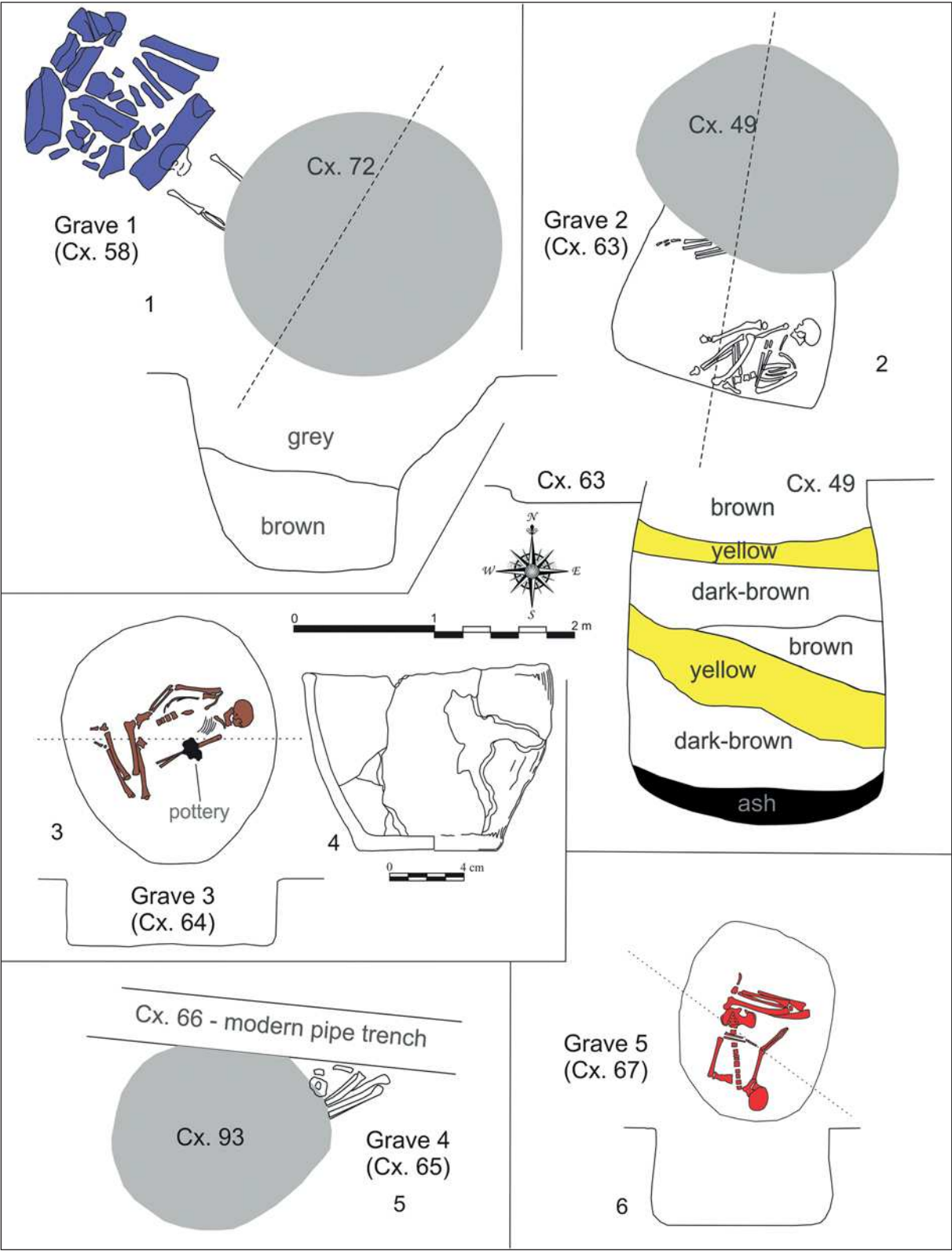


Fig. 3. Jijila-La grădini. Layout of graves 1-5

The bones are poorly preserved, as bone surface has exfoliated and was partly destroyed by plant roots. Traces of red pigments were found on the right side of the cranium. The individual was a female, aged 40–50.

*Grave no. 2 (Cx. 63)* – was a double burial (*Figs 2; 3.2*). The pit was most likely rectangular with rounded corners. The preserved section (east-west) measured 1.50 m. A granary dug in the Roman Age (Cx. 49) destroyed the rest of the grave and most of *individual 2*, of which only the lower limbs were found *in situ*. *Individual 3* was preserved in anatomical position, flexed on the right side, ENE-WSW oriented, with the lower limbs strongly flexed at the knee, the left arm placed on the thorax and the right arm on the abdomen. No grave goods were found.

Some of the bones of *individual 2* were found in pit (Cx.) 49. We recovered fragments of the cranium, the right scapula, clavicle diaphysis, fragmented diaphysis of the left side humerus, radius, femur and tibia, fragmented diaphysis of the right side cubitus, radius, innominate, femur and fibula. The bones on the right side are of dark brown colour with traces of red pigment (probably ochre). *Individual 2* is a male 45–60 years of age. Two pieces of a turtle shell plastron and several other fragments of animal bones were also found.

*Individual 3* is poorly preserved, most bones exhibiting exfoliated surfaces. Some of the bones show traces of red ochre, more pronounced on the cranium, long bones and leg bones. It was a male, aged 40–50. Along with the human osteological remains, a bovid rib with traces of ochre was also found.

*Grave no. 3 (Cx. 64)*. *Individual 4* was laid flexed on the left side, ENE-WSW oriented, in an oval-shaped pit of 1.50×1.80 m in diameter and 0.50 m in depth. Knees were strongly flexed, right arm placed on the abdomen and the left upper limb was parallel to the body. Ochre was very pronounced on the bones. A ceramic pot was found on the left arm (*Figs 2; 3.3–4*). *Individual 4* was a male, aged 45–55. Bone surface is exfoliated, several thoracic and lumbar vertebrae and fragments of all skeleton segments are missing. All bones are pigmented red. The left side of the cranium is of a more pronounced red colour.

*Grave no. 4 (Cx. 65)* was mostly destroyed by Cx. 66 and 93, thus the shape of the pit where *individual 5* was laid could not be identified. Parts of the lower and upper limbs, backbone and hip bones had been preserved *in situ*, suggesting that *individual 5* was probably laid flexed on the left side, NE-SW oriented (*Figs 2; 3.5*). Other bones (fragments of the cranium, right side of the mandible) were recovered from pit (Cx.) 93, dug during the Roman Age. The bones belonged to a 45–55 years old person of indeterminable sex. No grave goods were found.

*Grave no. 5 (Cx. 67)*. *Individual 6* was laid flexed on the right side, S-N oriented, in an oval-shaped pit of 1.45×1.10 m in size and 0.70 m in depth. Both knees as well as the left upper limb were strongly flexed. The right upper limb is extended to the knees (*Figs 2; 3.6*). No grave goods were found.

The skeleton was rather well preserved, with most bones covered in red pigment. The right side of the cranium is more intensely coloured with red. The individual was a male, aged 21–23.

*Grave no. 6 (Cx. 78)* – *Individual 7* was laid in a large oval-shaped pit (3.20×1.75 m), flexed on the left side, NNE-SSW oriented (*Figs 2; 4.1*). The lower limbs were strongly flexed at the knees and the upper limbs at the elbows. The bones and the surrounding area were impregnated with red pigment, likely ochre. The individual was a male, aged 40–45.

*Grave no. 7 (Cx. 79)* – *Individual 8* was laid in an irregular oval-shaped pit (2.20×1.65 m in size and 0.65 m in depth), flexed on the right side, E-W oriented. The lower limbs were strongly flexed, the left upper limb laid on the abdomen and the right upper limb extended to the knee (*Figs 2; 4.2*). The bones are poorly preserved, and their surface was mostly exfoliated. All skeleton segments show traces of red ochre, more intense on the right side. The individual was a male, aged 40–50.

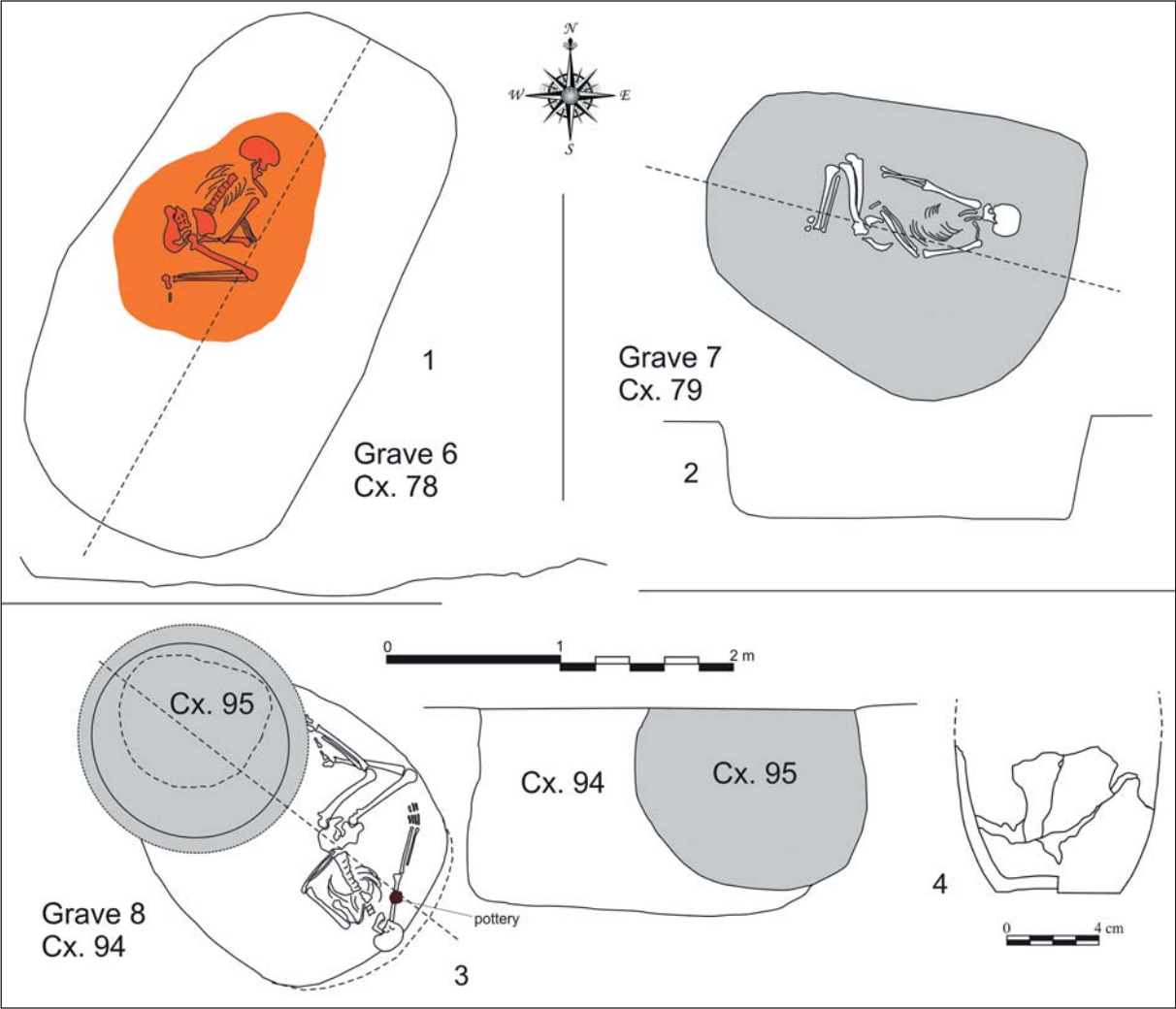


Fig. 4. Jijila–La grădini. Layout of graves 6–8

Grave no. 8 (Cx. 94) was partially overlapped by pit (Cx.) 95 (Roman Age). *Individual 9* was laid flexed on the right side, SSE-NNW oriented. Fragments of pottery were found on the arm bones. The lower limbs were flexed, the left upper limb on the abdomen and the right upper limb extended to the knee. The pit was rather large, oval-shaped (1.55 m wide), 1.30 m deep (Fig. 2; 4.3–4). The bones were well preserved, showing significant traces of red ochre, more compact on the right side of the cranium. More intense pigment traces were found on the joints and the posterior of the bones. *Individual 9* was a male of 33–46 years of age.

Anthropological data

Methodology for the analysis of human remains

The preservation of the bone surface was estimated according to Connell (CONNELL 2008, 9). For sex determination we used cranial (BUIKSTRA – UBELAKER 1994, 19–21) and postcranial (STECKEL et al.

2006, 19–24) features. For age estimation only the cranial suture synostosis (WHITE – BLACK – FOLKENS 2012, 389–391, fig. 18.7, 18.8) and the degenerative transformations of the preserved skeleton segments (UBELAKER 1980, 60–62, fig. 77, 81) were available for observation. The pathology was recorded and described using Ortner's book (ORTNER 2003).

### Remarks

The remains of the 9 individuals found in funerary features that can be dated to the Bronze Age were subject to anthropological analysis. In general, the bones were poorly preserved, mostly with exfoliated surface or destroyed by plant roots. All skeletons showed traces of red ochre, more pronounced on individuals 4 and 7 (graves 3 and 6).

Table 1. Information regarding the sex, age, position and orientation of the bodies

Jijila–La grădini	Grave #	Structure #	Sex	Age (years)	Position	Alignment
Individual 1	1	58	F	40–50	?	NW-SE
Individual 2	2	63	M	45–60	Flexed ?	?
Individual 3	2	63	M	40–50	Flexed on the right side	ENE-WSW
Individual 4	3	64	M	45–55	Flexed on the left side	ENE-WSW
Individual 5	4	65	?	50–60	Flexed on the left side	NE-SW
Individual 6	5	67	M	21–23	Flexed on the right side	S-N
Individual 7	6	78	M	40–45	Flexed on the left side	NNE-SSW
Individual 8	7	79	M	40–50	Flexed on the right side	E-W
Individual 9	8	94	M	33–46	Flexed on the right side	SSE-NNW

Most individuals are of older age. Only individual 6 is a young adult, while the rest are *maturus* or *senilis* adults. All individuals are males, except for *individual 1*, who is female, and *individual 5*, whose sex could not be determined.

*Individuals 1* and *3* exhibited an oval-shaped perforation at the base of the dental crown on the right side of the mandible, between molars 2 and 3. The rounded margins do not appear to be the result of caries, but rather of the repetitive presence of a hard object between the molars. *Individual 3* exhibited advanced attrition of all teeth, especially of the upper molars.

Though only part of the left humerus was preserved from *individual 2*, the lower part of the deltoid insertion was visible, showing the development of new bone, probably the result of a healed fracture or unspecific infection.

*Individual 6* showed signs of healed *cribra orbitalia* and *cribra cranii*. The left radius of individual 7 exhibited signs of a healed fracture of the distal third, probably an oblique fracture of the bone diaphysis, which healed incorrectly. *Individual 7* also showed pronounced signs of arthrosis of the sacrum joint with L5 and leg bones. The joint of the tibia and right hip bone showed several transformations, possibly the result of a healed fracture that caused the pronounced thickening of the third distal of the hip bone. It is possible that these healed fractures and lesions are the consequence of a trauma, such as falling from height. Such trauma rendered difficult the use of both the right lower limb and the left upper limb.

Slight signs of arthrosis were identified on the backbone of *individual 9*. The anterior parts of the lumbar vertebrae 4 and 5 were fused together, probably as a result of an accident.



### Funerary ritual and practices

Some of the graves were damaged by subsequent inhabitation, thus limiting the information we could extract regarding their setup. However, we can ascertain that the bodies were interred. The deceased were laid in pits of various shapes and sizes. Grave no. 3 is almost circular, while graves no. 5–8 are oval-shaped and elongated, sometimes appearing as rectangles with rounded corners. Grave no. 2 appears to have had the same oval shape, but was partially damaged by a pit dug during the Roman Age. The shape of the pit could not be identified for graves no. 1 and no. 4, likely also due to subsequent interventions. The depth of the pits also varies, from 0.10/0.15 m (graves no. 2 and no. 6) to 0.75 m (grave no. 8).

Almost all individuals were laid flexed on the right or the left side. It is very difficult to deduce the position of *individual 1*, which is missing most of the bones. Though poorly preserved as well, we could assume that *individuals 2* and *5* were laid flexed, on the right and, respectively, the left side.

Another obvious observation is that the bodies within graves no. 5, 7, and 8, though oriented differently, were laid in very similar positions – flexed on the right, flexed knees, the left upper limb placed on the abdomen and the right upper limb extended to the knee. In grave no. 3, the body was flexed on the left side, the knees flexed, the right hand placed on the hip, the left arm extended to the knee. *Individual 3* (grave no. 2) is much more compact, with the lower limbs strongly flexed from both hip and knee, the right arm on the abdomen and left arm on the thorax.

The orientation of the bodies varied, but a preference for the eastern sector, especially to the NNE and E (Fig. 5) stands out.

The use of red ochre is a common ritual element, found more abundantly in graves no. 3 and 6. The preservation of the red pigment on the bones, especially on the part resting on the ground, could be the result of a ritual to arrange the grave pit prior to the deposition of the body, as seen in grave no. 6.

Grave goods were found in only two burials. In grave no. 3, a small broken vessel was found on the left arm of the deceased. The vessel was unrestricted, sloppily shaped, slightly asymmetric, with simple

contour (Fig. 3.4). The artefact was unevenly burnt in a predominantly oxidizing environment. A probably similar vessel was placed on the right arm of the individual in grave no. 8, but only the lower part of the skeleton had been preserved (Fig. 4.4).

The stone structure partially overlapping the cranium of the body in grave no. 1 is a separate case, which unfortunately could not be properly documented, due to interventions subsequent to the burial. The structure probably marked the burial above the surface.

### Chronology of the burials

At first glance, the graves appeared to be a compact chronological group, as they were dug in a rather small area, all presented traces of red ochre and lacked grave goods.

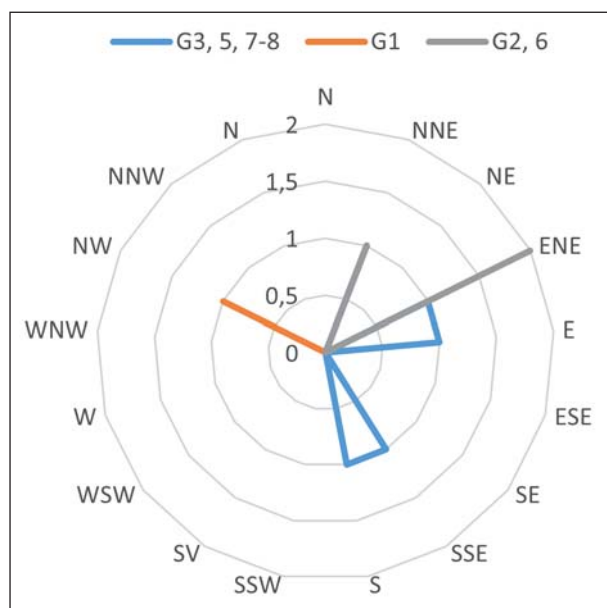


Fig. 5. Jijila–La grădini. Orientation of the bodies

### Radiocarbon dating

RoAMS Laboratory from 'Horia Hulubei' National Institute for R&D in Physics and Nuclear Engineering (SAVA *et al.* 2019) conducted radiocarbon dating for six (graves no. 1, 2, 5 to 8) out of the eight graves (Table 2). The results showed that the burials at Jijila occurred over a rather long time span, from the last century of the 4<sup>th</sup> millennium BC up to the 16<sup>th</sup> century BC (Table 2, Fig. 6).

Table 2. Jijila–La grădini. <sup>14</sup>C dating

Lab. No.	Context	Material	<sup>14</sup> C Data	δ13C (‰)	Results of the OxCal 4.4.2 calibration
RoAMS:1369.46	Cx. 58 (Grave no. 1)	Human bone	3979±36	-17.9	68.3% probability 2568 (37.1%) 2527 calBC 2497 (31.2%) 2465 calBC 95.4% probability 2580 (91.3%) 2402 calBC 2381 (4.1%) 2348 calBC
RoAMS:1364.46	Cx. 63 (Grave no. 2)	Human bone	3377±35	-21.8	68.3% probability 1736 (12.2%) 1717 calBC 1693 (56.1%) 1619 calBC 95.4% probability 1747 (95.4%) 1541 calBC
RoAMS:1365.46	Cx. 67 (Grave no. 5)	Human bone	4357±35	-17.2	68.3% probability 3011 (68.3%) 2914 calBC 95.4% probability 3089 (8.1%) 3056 calBC 3033 (87.3%) 2899 calBC
RoAMS:1366.46	Cx. 78 (Grave no. 6)	Human bone	3630±35	-16.3	68.3% probability 2110 (2.2%) 2104 calBC 2035 (66.1%) 1937 calBC 95.4% probability 2133 (13.5%) 2085 calBC 2052 (82.0%) 1892 calBC
RoAMS:1367.46	Cx. 79 (Grave no. 7)	Human bone	4193±39	-17.8	68.3% probability 2886 (18.5%) 2851 calBC 2809 (35.4%) 2747 calBC 2726 (14.4%) 2698 cal BC 95.4% probability 2896 (25.0%) 2831 calBC 2822 (67.8%) 2663 calBC 2651 (2.7%) 2632 cal BC
RoAMS:1368.46	Cx. 94 (Grave no. 8)	Human bone	4297±35	-13.2	68.3% probability 2926 (68.3%) 2883 calBC 95.4% probability 3011 (95.4%) 2879 calBC

Graves no. 5, 7, and 8 are the earliest, dating back to the end of the 4<sup>th</sup> millennium and early 3<sup>rd</sup> millennium BC (Table 2, Fig. 6). The three burials, together with grave no. 3 could make up a unitary group, based on the deposition of the body in the pit, as well as on the grave goods found in graves no. 3 and 8.

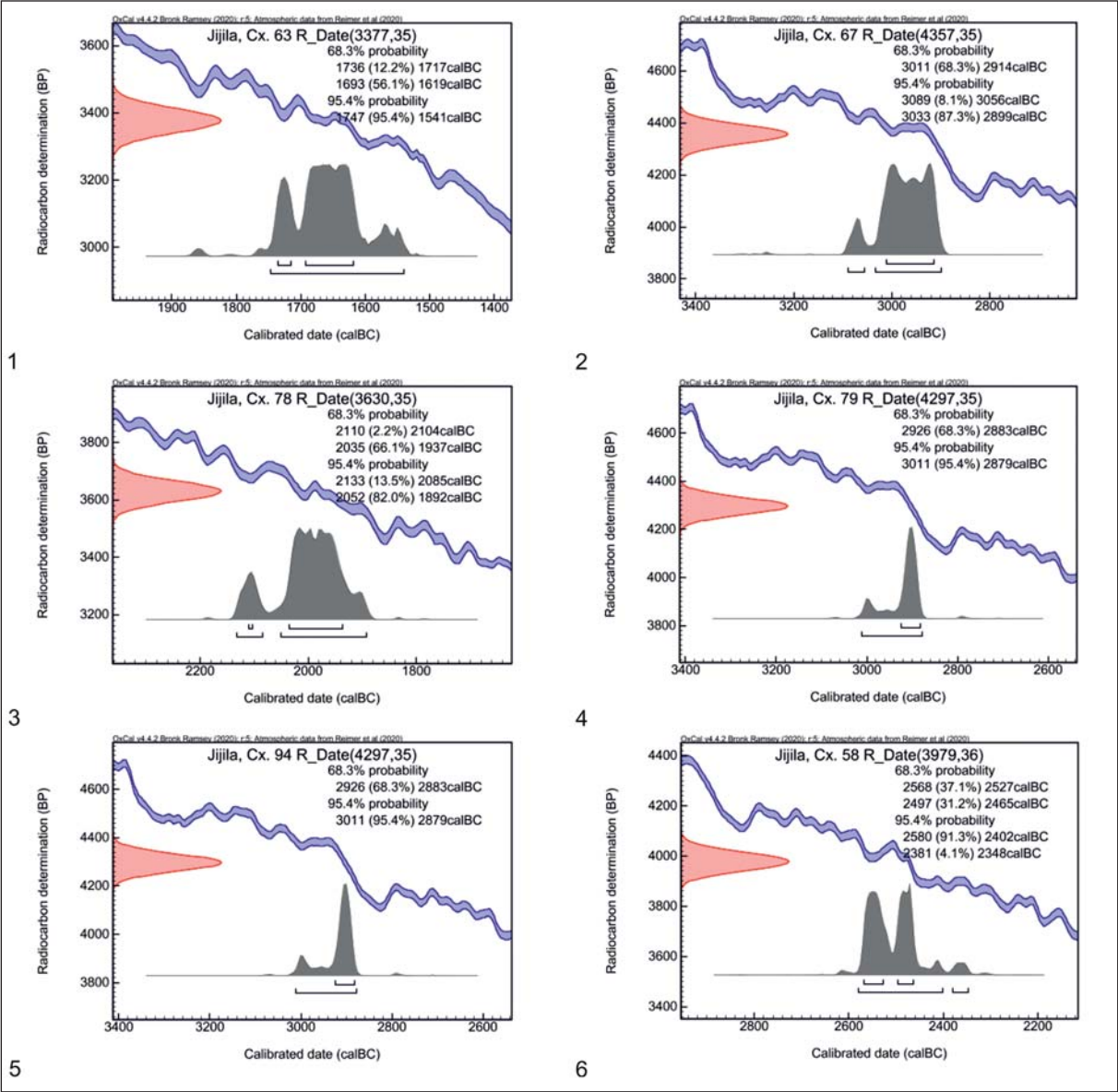


Fig. 6. Jijila–La grădini. Modelling of <sup>14</sup>C data for Bronze Age burials

The other three graves (no. 1, 2 and 6) are dated to much later stages, at a considerable time apart. Thus, grave no. 1, with the stone structure, could be dated to the middle of the 3<sup>rd</sup> millennium BC, grave no. 6 to the end of 3<sup>rd</sup> millennium BC–early 2<sup>nd</sup> millennium BC, while grave no. 2 is the latest, dated to 18<sup>th</sup>–16<sup>th</sup> century BC.

**The graves at Jijila in the context of the Bronze Age at the Lower Danube**

Even though numerous archaeological research has been conducted in Dobrudja, the Bronze Age has remained one of the little known periods in this region. Practically, after the explosive human presence during the Gumelnița culture, featuring numerous settlements (HAȘOTTI 1997; VOINEA 2005; CAROZZA

– BEM – MICU 2011, etc.), a little known period followed at the Lower Danube, that could be assigned to the cultural horizons identified at Cernavodă (I, III, II), deemed specific to the end of the Eneolithic and the first part of the Early Bronze Age (see MORINTZ – ROMAN 1968; 1970; BERCIU – MORINTZ – ROMAN 1973; ROMAN 1981; NIKOLOVA 1999; OANȚĂ-MARGHITU 2003; GOVEDARICA 2004; VERNESCU 2013; FRÎNCULEASA – PREDA – HEYD 2015, etc.).

Early and Middle Bronze Age is represented at the Lower Danube and especially in Dobrudja by a series of isolated finds of metal, stone or pottery items (e.g. LĂZURCĂ 1977; HARȚUCHE 1979; IRIMIA 1977; 1981; 1982; 1998; 2003; VASILIU 1996a; 1996b; 2007; 2008; AILINCĂI 2005; 2009; ȘTEFAN 2007 i.a.), flat necropolises or isolated graves (PETRESCU-DÎMBOVIȚA 1953; HARȚUCHE 2002; FRÎNCULEASA – PREDA – HEYD 2015; BRUJAKO – AGULNIKOV 2017, etc.), but especially by numerous tumuli that, despite intensive agricultural works in the area, are still visible (JAROVOJ 1985; MOTZOI-CHICIDEANU 2011, 190–329; SCHUSTER *et al.* 2011; VERNESCU 2013; AILINCĂI *et al.* 2014; 2016; SAVA – AGULNIKOV – MANZURA 2019, etc.).

The ritual of tumular burials with ochre appears to have originated in the Eneolithic, being adopted by various populations across a vast area, from the Ural Mountains to the Middle Danube (HÄUSLER 1974; 1976; JAROVOJ 1985; MOTZOI-CHICIDEANU 2011; RASSAMAKIN 2011; ALEXANDROV 2011; KAISER – WINGER 2015; FRÎNCULEASA – PREDA – HEYD 2015; ALEXANDROV 2020; DIACONESCU 2020, etc.). This funerary practice, known as “Yamnaya burials”, probably emerged from a complicated process and cannot be explained by the mere evolution of practices in a certain culture (MOTZOI-CHICIDEANU 2011, 226; on the emergence of funerary architecture in Eurasia, also see RASSAMAKIN 2011). In the absence of funerary inventory in Yamnaya burials, numerous radiocarbon analyses have been performed (BOJADŽIEV 1995; KLOCHKO – KOŠKO – SZMYT 1999; TELEGIN – PUSTOVALOV – KOVALYUKH 2003; RASSAMAKIN – NIKOLOVA 2008; NIKOLOVA – KAISER 2009; MOTZOI-CHICIDEANU 2011; MORGUNOVA – KHOKHLOVA 2013; FRÎNCULEASA – PREDA – HEYD 2015, 48 *et seq.*; KAISER – WINGER 2015; FRÎNCULEASA 2019; DIACONESCU 2020, etc.). Unfortunately, much of the radiocarbon dating is unusable, due to the very large error margins (RASSAMAKIN – NIKOLOVA 2008, Tab. 1). Broadly, radiocarbon dating indicates an interval between 3500/3350–2300 BC, with higher incidence towards 3050/3000 – 2300/2200 BC (BOJADŽIEV 1998; RASSAMAKIN – NIKOLOVA 2008, 65; MOTZOI-CHICIDEANU 2011, 226–227; ALEXANDROV 2015; ALEXANDROV 2020; FRÎNCULEASA – PREDA – HEYD 2015; KAISER – WINGER 2015; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, etc.).

Considering the above, several of the graves at Jijila are contemporary with the Yamnaya phenomenon, which is well documented at the Lower Danube. The earliest group at Jijila, consisting of graves no. 5 (4357±35 BP), 7 (4193±39 BP), 8 (4297±35) and probably no. 3, even though they are all flat burials, could be ascribed to the 3<sup>rd</sup> millennium BC, corresponding to Cernavodă II culture. Though dated much later, towards the middle of the 3<sup>rd</sup> millennium BC, grave no. 1 (3979±36 BP) could also be considered contemporary with the late Yamnaya and Katakombnaya burials (see the data from Smeeni: FRÎNCULEASA *et al.* 2017). Moreover, there are several ritual elements similar to tumulus burials, such as the shape of the pits, the use of ochre and position of the body (HÄUSLER 1974, Abb. 1/A, K; JAROVOJ 1985, Fig. 2/30–33, 38–41). Though very rare, the stone structures are also found among Yamnaya burials (VASILIU 1995, 145; MOTZOI-CHICIDEANU 2011, 268–269; ALEXANDROV 2019, etc.).

Radiocarbon dating for Bronze Age contexts at the Lower Danube is rather scarce. Some of the first radiocarbon dating was applied to the finds from the tumulus at Baia (Hamangia), Tulcea County (LÁSZLÓ 1997; NEUSTUPNY 1968; MOTZOI-CHICIDEANU 2011, 226). There is also the radiocarbon date from tumulus 1, grave no. 1 and tumulus 2, grave no. 5 at Rahman (AILINCĂI *et al.* 2014; 2016). Relatively recently, a new date was obtained for grave no. 5 of tumulus 2 at Rahman, for a sample of



wood from the beams covering the grave pit (RoAMS 1370.46: 4196±32 BP), indicating 2894–2672 cal BC, which is even earlier than the radiocarbon dating for the initial human bone sample.

Some radiocarbon dating has also been performed for tumular burials in northern Wallachia. Thus, the samples from the tumuli at Aricești IV (graves no. 1, 3B and 5B) could be dated to the second half of the 4<sup>th</sup> millennium BC, while the rest are dated to the end of the 4<sup>th</sup> millennium and the middle of the 3<sup>rd</sup> millennium BC (see FRÎNCULEASA *et al.* 2013; FRÎNCULEASA – PREDA – HEYD 2015; FRÎNCULEASA *et al.* 2019; FRÎNCULEASA 2020a).

While graves no. 1, 3, 5, 7–8 from Jijila could be considered contemporary with the Yamnaya phenomenon, graves no. 6 (3630±35 BP) and 2 (3377±35 BP) belong to subsequent chronological horizons, such as a post-Yamnaya horizon that was contemporary with the Katakombnaya (NIKOLOVA 1999; KAISER 1999; 2003; IVANOVA – PETRENKO – VETCHINNIKOVA 2005, 147–160; MIMOHO� – SHISHLINA – HOMMEL' 2020) or with the Multi-Cordoned Ware culture (also known as Mnogovalikovaya). Though no grave goods were found, these burials have common characteristics with Mnogovalikovaya funerary rituals, such as the shape of the pit, the use of ochre, the deposition of the body flexed on the left side (only in the case of grave no. 6) and the orientation to the NE-E sector (SAVVA 1992; MOTZOI-CHICIDEANU 2011, 553–557). The same funerary ritual elements were also found in burials in Wallachia, dated to the Middle Bronze Age, that could be assigned to Tei culture. The radiocarbon dating for such burials at Smeeni and Pietrosu-Costești points to the end of the 3<sup>rd</sup> millennium and the first quarter of the 2<sup>nd</sup> millennium BC (FRÎNCULEASA 2020b), meaning they are contemporary with the burials ascribed to the Mnogovalikovaya culture. In his paper dedicated to this culture, Eugen Savva also assigned to this culture a series of finds at the Lower Danube (SAVVA 1992; BURTĂNESCU 2002; VERNESCU 2013, 167–168), though some have been subject to severe criticism (MOTZOI-CHICIDEANU 2011, 547–564). Initially, based on the synchronism with phases Ic3-I of the Monteoru culture and with phase IIA of the Komarov culture, it was considered that these burials could be dated to 17<sup>th</sup>–15<sup>th</sup>/14<sup>th</sup> centuries BC (SAVVA 1992). However, the radiocarbon dating for burials at Zatoka (SZMYT – CHERNYAKOV 1999, 198), Svatovo (MOTZOI-CHICIDEANU 2011), Mironivka (KLOCHKO 1999), Movila Lyubasha or Revova (IVANOVA – PETRENKO – VETCHINNIKOVA 2005, 163), as well as for other sites investigated in the area between the Dnieper and Don Rivers (MIMOHO� – SHISHLINA – HOMMEL' 2020), indicate an earlier chronology, probably 2400/2300–1800 BC (MOTZOI-CHICIDEANU 2011, 547–548). In fact, earlier dating of Mnogovalikovaya features is also supported by the radiocarbon analysis conducted for Monteoru culture sites. For Monteoru Ic3 phase, the radiocarbon dating indicates 2200–1800 BC, while the finds from Monteoru Ia-IIa and IIb continue up to 1500 BC. Thus, the end of the Monteoru culture was partially contemporary with the Noua culture sites (MOTZOI-CHICIDEANU – ȘANDOR-CHICIDEANU 2015; CONSTANTINESCU 2020; FRÎNCULEASA 2020b).

The next chronological horizon at the Lower Danube is represented by Sabatinovka-Noua-Coslogeni finds, which were probably present there since the 16<sup>th</sup>–15<sup>th</sup> centuries BC (LÁSZLÓ 1993; POPA – BOROFFKA 1996; MOTZOI-CHICIDEANU – GUGIU 2004; SAVA 2002; KAISER – SAVA 2009; BOLOHAN 2016; SOROCEANU *et al.* 2019), up to the 11<sup>th</sup> century BC, as indicated by radiocarbon dating from Durankulak (BOJADŽIEV 1995).

\*

According to the above-mentioned brief chronology of the main stages of the Bronze Age at the Lower Danube, the graves found at Jijila could be dated to a time contemporary with Yamnaya burials, up to the emergence of Sabatinovka-Noua-Coslogeni cultures.



### Possible relations with the Bronze Age habitation at Jijila

As already presented in the beginning of this paper, the research conducted in 2018–2019 at Jijila–*La Grădini* also led to the finding of pits with Bronze Age pottery, specific to the Noua-Sabatinovka horizon. The radiocarbon dating for 8 such structures points to 1500–900 BC, obviously subsequent to the burials analysed in this paper (*Fig. 7*). Pit no. 5, found near grave no. 1, is an exception, as it contains different pottery materials (*Fig. 8*) – fragment of a stone axe (*Fig. 8.10*), one striker (*Fig. 8.11*), and one spindle-whorl (*Fig. 8.9*), along with pieces of various independent restricted vessels with inflected contours. Some of the vessels are slim with narrow neck (*Fig. 8.1, 4–6*), while others are flat with wide opening (*Fig. 8.2–3, 7*). Only one of the fragments suggests a vessel with one or more handles (*Fig. 8.8*). Decoration of the rim with alveoli is visible in two instances (*Fig. 8.2, 5*), while such patterns or oblique lines are visible in the area between the neck and the shoulder of the vessels (*Fig. 8.2–3, 6–7*) in three other instances. An assymetric incised decoration is visible on the lower part of one of the vessels (*Fig. 8.2*).

The typological analysis indicates that the vessels are similar to those assigned to the Cernavodă II culture (see: MORINTZ–ROMAN 1968, 106–118; BERCIU – MORINTZ – ROMAN 1973; FRÎNCULEASA 2020c). The radiocarbon date for a bone from this feature (RoAMS: 1357.46 – 3564±28 BP) indicates 2017–1778 cal BC (95.4% probability), which is too recent for the Cernavodă II culture. The radiocarbon

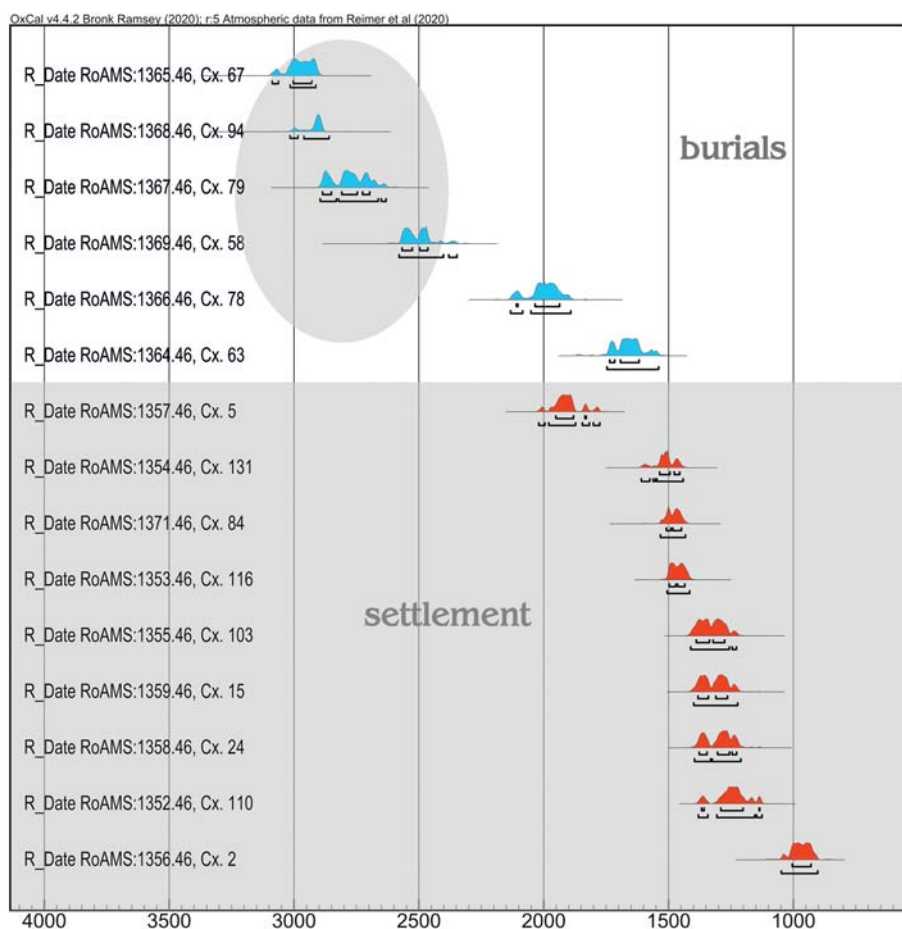


Fig. 7. Jijila–*La grădini*. Modelling of radiocarbon data of burials and habitation at the end of the Bronze Age

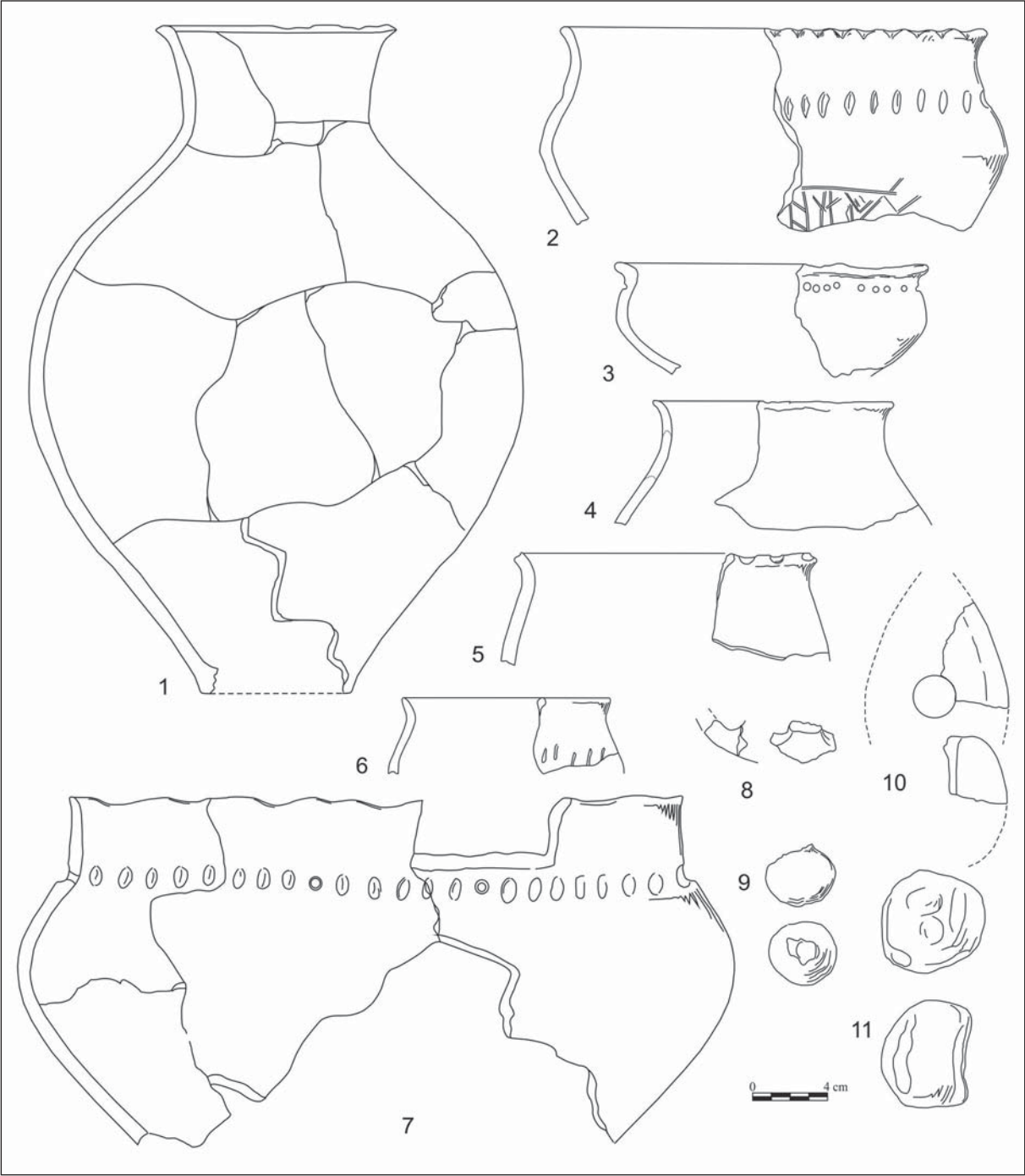


Fig. 8. Jijila–La Grădini. Items found in pit 5

dates from Cernavodă II culture sites in northern Wallachia or Moldova indicate the last quarter of the 4<sup>th</sup> millennium and the beginning of the 3<sup>rd</sup> millennium BC (MUNTEANU 2018; FRÎNCULEASA 2020c), much earlier than the dating obtained for the feature at Jijila. Practically, if we consider the above, it is very likely that pit no. 5 was contemporary with graves no. 3, 5, 7–8.

## Flat necropolises or isolated burials from Early and Middle Bronze Age at the Lower Danube

The research conducted in 2018–2019 at Jijila unveiled a rather compact group of eight flat inhumations. Though they seemed, at first, rather close chronologically, the radiocarbon dates indicate that more than one millennium passed between the earliest and the latest burial. Even though the layout and the timing of the graves is specific to the tumular structures (with numerous secondary burials), no clues were found to indicate the existence of a tumulus that could have been destroyed by subsequent interventions. This is not a unique situation in the sites at the Lower Danube. We were able to identify several other mentions of flat burials with ochre in the archaeological literature. Unfortunately, many of these graves have not been published in detail.

### Catalogue of the finds

#### 1. Bălteni, Buzău County

During the archaeological research conducted at a Late Iron Age site on the bank of Strâmbu brook, several pottery fragments were found, which the researchers assigned to the Bronze Age. Amongst them, fragments from an *askos* were identified. In this context, the researchers mention a grave with a flexed human body, traces of ochre and no inventory (DRAGOMIR 1962, 21).

#### 2. Bordușani, Ialomița County

While researching the Gumelnița culture *tell* on the bank of the Danube, several graves assigned to Cernavodă II culture were also investigated; however, they are merely mentioned (MARINESCU-BÎLCU 1997, 37).

#### 3. Brăilița, Brăila County

The prehistoric site at Brăilița was investigated between 1955–1975 and in 1987 by a team led by Nicolae Harțușche. The finds of the excavations were published on several occasions (HARTUȘCHE – ANASTASIU 1968; HARTUȘCHE 2002). It is a flat necropolis<sup>1</sup>, where 310 tombs were researched over an area of 1150 sqm. Unfortunately, the monograph of the necropolis contains numerous errors and lacks modern dating elements, anthropological analyses, as well as accurate graphics (see criticism in MOTZOI-CHICIDEANU 2011, 201–206; SCHUSTER 2018). The author considered that the earliest stage of the necropolis could be dated to the Cernavodă I culture (135 tombs), the second stage to Foltești-Usatovo (137) and Cernavodă II (27) cultures, and the last stage could correspond to Early and Middle Bronze Age (23), assigned to the so-called “Pontic steppe culture” (HARTUȘCHE, 121–138). When analysing the paper on the necropolis at Brăilița, I. Motzoi-Chicideanu considered that “no cultural differentiation is possible for the great majority of the graves”, because there are in fact “very few burials with pottery inventory that could point to other cultural groups of the Early Bronze Age” (MOTZOI-CHICIDEANU 2011, 202). The same researcher pointed out that the discoid buckles made of bone, found in graves no. 70 (assigned to Cernavodă II culture) and 173 (assigned to the “Pontic steppe culture”), are characteristic to Mnogovalikovaya (MOTZOI-CHICIDEANU 2011, 205). Recently, Cristian Schuster (SCHUSTER 2018) published a new critical approach on the finds at Brăilița. In fact, in the absence of modern dating elements, the necropolis at Brăilița remains little known. Based on the grave goods, the burials could be broadly dated to the end of the Eneolithic (Usatovo) up to the Middle Bronze Age (Mnogovalikovaya), as indicated by the discoid bone buckles found in the two mentioned graves.

<sup>1</sup> The first papers on the site at Brăilița refer to a tumulus, which is no longer mentioned in more recent publications (HARTUȘCHE – DRAGOMIR 1957; NECRASOV – CRISTESCU 1957).

#### 4. Bucu–Pochină, Ialomița County

The site at Bucu is situated on the terrace of the Ialomița River. Among the remains dated mostly to the Early Iron Age, there is also the mention of a double inhumation, containing the skeletons of an adult and a child. The adult was placed in supine position, NE-SW oriented, with the legs bent at the knees and fallen to the left, while the skeleton of the child was laid in extended position, inclined on the right side, W-E oriented (RENTA 2016, 120).

#### 5. Cernavodă, Constanța County

During the archaeological research conducted in 1936, north of Cernavodă, on the promontory on the Danube River bank, two graves were investigated. The pit of one of them was rectangular, with the body laid flexed on the right side, SSE-NNW oriented. An *askos* and another small pot were placed with the body. In the second grave, the body was laid in supine position, SSE-NNW oriented, together with a vessel and a silex blade (NESTOR 1937; BERCIU – MORINTZ – ROMAN 1973, 395–396). The two finds are dated to the end of the Eneolithic and the Early Bronze Age, and they were assigned to Cernavodă I and II cultures (MOTZOI-CHICIDEANU 2011, 85; FRÎNCULEASA – MIREA – TROHANI 2017).

#### 6. Chirnogi–Terasa Rudarilor, Călărași County

During the rescue excavations conducted in 1988 by Done Șerbănescu at *Terasa Rudarilor*, three graves were identified and assigned to the Bronze Age (MOTZOI-CHICIDEANU 2011, 86, 328).

#### 7. Cireșu, Brăila County

During the research of a settlement dated to the early Gumelnița culture, situated on a promontory in Călmățui flood plain, a grave with a body laid flexed on the left side, N-S oriented, without any grave goods, was also found (SÎRBU 1980, 27).

#### 8. Ciulnița, Călărași County

While investigating several tumuli from the Bronze Age at Ciulnița, a flat grave was identified, situated approx. 6 m north of tumulus II. In the rectangular pit with rounded corners, 1.55×0.90 m in size, NE-SW oriented, two individuals were laid – an adult in supine position, W-E oriented, and a child flexed on the left side, E-W oriented, without any grave goods (RENTA 2016, 119–120).

#### 9. Crăsanii de Jos, Balaciu, Ialomița County

In the course of investigations at an Iron Age site situated on a terrace on the left bank of Ialomița River, a grave was found with three bodies that were deposited consecutively. The first individual was laid flexed on the left, NE-SW oriented, with a lot of ochre sprinkled on it. The second individual was in partial anatomical position, while the third was flexed on the right, NNE-SSW oriented. A silex splinter was found near the third individual (NEAGU 1992). Ion Motzoi-Chicideanu also mentions the finding of a silver hair ring (MOTZOI-CHICIDEANU 2011, 90).

#### 10. Curățești–Biserica Veche, Frăsinet, Călărași County

Four inhumations were identified during rescue excavations in 2005. The bodies were laid flexed on the left side, E-W oriented. A circular bone buckle was found in grave no. 8, suggesting its possible dating to the Middle Bronze Age (ȘERBĂNESCU – SOFICARU 2006, 343–344).

#### 11. Devnya, Varna region, Bulgaria

Three inhumations were researched during surveys at an Eneolithic settlement. The bodies were laid flexed, accompanied by two small unrestricted vessels and one silex blade. Based on the stratigraphy (overlapping the

Eneolithic settlement) and grave goods, the author of the find dated the graves to the first part of the Bronze Age (IVANOV 1972; NIKOLOVA 1995).

## **12. Dridu, Ialomița County**

During the excavations at Dridu, in 1956, on the southern bank of the Comana Lake, among features assigned to Glina culture, Iron Age and Middle Ages, two graves were also found, with the bodies flexed on the right, oriented approx. ENE-WSE, no inventory. The tombs were dated to the Bronze Age (NESTOR – ZAHARIA 1959, 547).

## **13. Durankulak, Varna region, Bulgaria**

The group of graves investigated at Durankulak could be dated between the end of the Eneolithic and the Early Bronze Age. There are 17 graves, separated or distributed in small groups, leading the archaeologists to take into consideration the possibility of small tumuli that were not preserved (VAJSOV 2002, 159–160, Abb. 176). In the absence of radiocarbon dating, based only on the setup of the graves, grave goods and the deposition of the bodies, they were ascribed to several chronological intervals. Thus, grave no. 164 is considered specific to the Suvorovo group, which is followed by a horizon contemporary with Cernavodă I culture (graves no. 448, 985, 1028). Grave no. 982 contained the skeleton of a child laid flexed, together with silex tools and a copper dagger specific to Usatovo-Cernavodă III cultures. The same dating is proposed for graves no. 119 and 190. The fourth stage is represented by grave no. 1126, marked by a circle of stones. The grave had a rectangular pit and the deceased was laid flexed, oriented to the west, together with an anthropomorphic stela. According to Igor Manzura, this grave meets the characteristics of the Budzhak group of the Yamnaya culture (VAJSOV 2002; MANZURA 2005).

## **14. Gherăseni–Lacul Frâncului, Buzău County**

At the site on the right bank of Călmățui River, several “graves with ochre” were investigated, but published very briefly (DIACONU 1977, 341, Fig. 4; CONSTANTINESCU 1994, 105–106, Fig. 4). For the five graves investigated in 1991–1992, the author of the survey mentions that the bodies were laid flexed, on either the left or the right side, all E-W oriented. Inventory was found only in grave no. 70, consisting of two vessels deemed specific to Cernavodă II culture (CONSTANTINESCU 1994, 106, Fig. 4/1-2) or even to Cernavodă I horizon (FRÎNCULEASA – MIREA – TROHANI 2017, 80, 82).

## **15. Grădiștea, Brăila County**

Along Buzău River, on a small promontory south of Grădiștea, Brăila County, known as “Elisa’s grave”, 20 inhumations were investigated, out of which 5 were dated to the Bronze Age (graves no. 2–3, 7, 16 and 20). The bodies had been placed flexed (in 4 instances) or in supine position (1 instance), with different orientations. Vessels were found in three of the graves, two of which are considered specific to Monteoru culture (Ic1, Ic3) (HARȚUCHE – ANASTASIU – SÎRBU 1983).

## **16. Gumelnița–Valea Mare, Călărași County**

During the rescue survey conducted in 1985–1989, several inhumations with flexed bodies and vessels as inventory, were found. The find was ascribed to Cernavodă II culture (MOTZOI-CHICIDEANU 2011, 108).

## **17. Gumelnița–tell, Călărași County**

In the Gumelnița D layer, a burial in a stone cist was found, with the skeleton of a child laid in flexed position, together with a vessel (ROSETTI 1959, 812). Ion Motzoi-Chicideanu considered that this find is difficult to date or ascribe to any cultural group, but pointed out that the stone structure was similar with the burials in the Zimnicea group or in the Yamnaya tumuli (MOTZOI-CHICIDEANU 2011, 221).



### 18. Hagieni, Mihail Kogălniceanu, Ialomița County

A double burial is mentioned at Valea Bursucului. The burial was initially ascribed to Coslogeni culture (REŢA 2016, 120).

### 19. Hârşova, Constanța County

There is brief information about a necropolis identified in the southern part of Hârşova, on the high terrace on the bank of the Danube, where several graves with red ochre were probably destroyed. Two of the bodies were oriented to the WSW. Also, five cord-impressed vessels, specific to Yamnaya burials, were recovered (MORINTZ – ŞERBĂNESCU 1974, 49–51, Fig. 4; HARTUCHE 1979, 76).

### 20. Isaccea–Suhat, Tulcea County

On a prominent terrace near the Danube, during the research of a settlement assigned to the Boian culture (MICU 2006), two inhumations were also identified. The graves had been extensively damaged by the inhabitation during the Greek and Roman ages. From the remains *in situ*, the pits of the graves appeared to be circular or oval in shape, and the bodies were placed flexed or in supine position. Traces of ochre were found on the bones. No anthropological data or radiocarbon dating is available. In grave no. 2, a small vessel was found – an independent restricted vessel of inflected contour, with stamped decoration on the rim and shoulder (Fig. 9). The vessel was recently assigned to Cernavodă I group (first half of the 4<sup>th</sup> millennium BC) (FRÎNCULEASA – MIREA – TROHANI 2017, 83, Pl. 10). However, we need to consider that both the shape and the impressed decoration are also encountered in Zhivotilovka, Yamnaya and even Katakombnaya burials (ČERNJAKOV – TOSCHEV 1985; JAROVJ 1985, Figs 19/1–3; 21/2; ALEKSEEVA 1992, Fig. 24, 26; SUBBOTIN – TOŠEV 2002, Figs 8–9, 21; KAISER 2003, 81–126; IVANOVA – PETRENKO – VETCHINNIKOVA 2005, Fig. 34; BUNJATJAN – KAISER – NIKOLOVA 2006, Abb. 6/4–6; 21/3; 22/6; 28/2; 33/3; 53/3, 5; 68/9–10; 84/5; 88/5; 96/3, 5; 123/6–7; 126/3; 137/6; 141/9; 152/5; BRUJAKO – SAMOJLOVA 2013, 211–275; ČERNYH – DARAGAN 2014; SAVA – AGULNIKOV – MANZURA 2019, Fig. 26/5; 33/2; 48/5, etc.).

### 21. Izvoarele, Lipnița, Constanța County

In 1977, in the area of Izvoarele, two vessels, one ceramic figurine and a fragment of a stone axe were found, probably from one or several graves destroyed in the process of irrigation works. The find was dated to the Early Bronze Age (IRIMIA 1981, 349–350, Fig. 3; 4/1).



Fig. 9. Isaccea–Suhat. The vessel found in grave no. 2

## 22. Jijila–La Grădini, Jijila, Tulcea County

During the archaeological survey conducted in 2018–2019, eight flat inhumations were investigated. The bodies were laid flexed on either side; ochre was used in all instances. Only two of the graves contained inventory, in the form of two small unrestricted vessels (AILINCĂI *et al.* 2020).

## 23. Lișcoteanca–Movila Olarului, Brăila County

The site is located on a promontory in Călmățui flood plain, where a *tell* settlement was identified, together with several inhumations, of which 10 can be ascribed to the Bronze Age (HARTUCHE 1979; 1987, 33–36, Fig. 43–44). Three of the bodies were placed in supine position, while the rest were laid flexed on the left side. The bodies were oriented predominantly to the eastern sector, especially E-W. The use of ochre is mentioned in some instances. The graves where the bodies were in supine position (graves no. 1, 4 and 11) also included grave goods – four bowls and a mug (HARTUCHE 1987, Fig. 44/1, 3–6; VERNESCU 2013, Pl. 36–37), while a small round vessel was found near the cranium of the individual from grave no. 12 (HARTUCHE 1987, Fig. 44. 2). The vessels in graves no. 1 and 4 have analogies in Katakombnaya burials (KAISER 2003, 81–101; FRÎNCULEASA *et al.* 2017). In the absence of radiocarbon dating, we can assume that at least part of the inhumations are contemporary with the Catacomb Culture.

## 24. Lișcoteanca–Movila din Baltă

The discovery of two inhumations on a promontory known as *Movila din Baltă* are mentioned as overlapping the Neolithic and Eneolithic inhabitation layers assigned to Boian and Gumelnița cultures. The bodies were laid flexed (one on the right side and one on the left side), E-W oriented, without grave goods. There is no information on the shape of the pits (HARTUCHE 1979, 71).

## 25. Oltenița–Calomfirescu, Călărași County

A flat inhumation was accidentally found. The body was flexed, deposited together with four vessels, of which one *askos* and one bowl, considered similar to the artefacts found in the graves researched by Ion Nestor at Cernavodă (BERCIU – MORINTZ – ROMAN 1973, 396). Ion Motzoi-Chicideanu assigned this find to the Zimnicea group (MOTZOI-CHICIDEANU 2011, 286).

## 26. Orlovka–Kartal, Odessa reg., Ukraine

The Orlovka–Kartal complex is situated on a highly visible place on the Danube's bank. During the surveys conducted after 2005, 13 Bronze Age burials were identified over a rather large area (BRUJAKO – AGULNIKOV 2017, Fig. 1). Only some of the burials were connected to a possible tumulus that was not identified at the site. By analysing the funerary ritual elements and grave goods (pottery vessels, discoid buckles or stone artefacts), the authors assigned several burials (five) to a period contemporary with the late phase of Yamnaya burials, while other burials were considered specific to Mnogovalikovaya culture. Though numerous tumuli were identified and investigated, the authors mention that at least some of the graves investigated at Kartal are flat (BRUJAKO – AGULNIKOV 2017).

## 27. Ostrov–Piatra Frecăței, Tulcea County

Petre Aurelian makes a brief mention of a group of graves with bodies laid flexed, found during the investigations conducted in 1958–1959. Four hair rings were found at the site (BERCIU 1965, 65–66; COMȘA 1978, 21).

## 28. Panduru, Baia, Tulcea County

There is succinct information on a group of flat inhumations from the Bronze Age (LUNGU – MICU 2003). In a paper dedicated to the finds assigned to Gumelnița culture, four graves are mentioned as overlapping pits from

the Eneolithic. Two of the burials contained bodies laid in supine position, oriented ENE-WSW and ESE-WSW, respectively. The other two graves (no. 5 and no. 1) contained bodies placed flexed, one of them oriented NNE-SSW (no. 5). The description did not include details on the shape of the pits, as the burials had been seriously damaged by recent agricultural works (Fig. 10.1–3). In the collections of Tulcea History and Archaeology Museum, we were able to identify a small independent vessel of inflexed contour (Fig. 10.4) found in grave no. 2, which was not described in the cited paper. The vessel does not provide a very accurate dating, as it is frequently used in burials from Early and Middle Bronze Age at the Lower Danube as well as in the North Pontic area.

### 29. Pietrele, Băneasa, Giurgiu County

During the surveys conducted in 2011, an inhumation burial was also investigated. The body was laid flexed on the left side, NW-SE oriented. Near the cranium, the skull of a dog was found. Between the skeleton's leg, an intentionally bent copper dagger was placed. Typologically, the dagger could be dated to the end of the 4<sup>th</sup> millennium and the beginning of the 3<sup>rd</sup> millennium BC (HANSEN 2014, 250, Figs 10–11).

### 30. Platonești, Ialomița County

A double inhumation of an adult and a child, is mentioned. The adult is laid flexed on the right side, and the child was flexed on the left side, both E-W oriented. Eight pendants made of animal fangs were found near the child (REŢA 2016, 120).

### 31. Râmnicelu, Brăila County

During the surveys at the Cernavodă I culture settlement, several inhumations ascribed to subsequent periods were investigated. Amongst them, grave no. 10 was identified in 1969 on the eastern side of the promontory. The pit was oval-shaped and the body was placed flexed on the left side, E-W oriented. A small vessel, negligently shaped, was placed in front of the cranium (HARTUCHE 1973, 18–19, Figs 3/1; 4/3; HARTUCHE 1980, 37). Around the palms, remains of a copper object were identified. The find is difficult to date, but based on the stratigraphy it could be subsequent to Cernavodă I horizon.

### 32. Sarichioi–La Bursuci, Tulcea County

In the course of the surveys conducted in 1978 on Razelm Lake shore, in a place the locals call *La Bursuci*, seven graves were identified, whose pits were dug into the layers of an early Gumelnița settlement (OBERLÄNDER-TÂRNOVEANU – OBERLÄNDER-TÂRNOVEANU 1979). In graves no. 1, 3, 6, and 7, the bodies were flexed on the left side, oriented to the N-NE. Grave no. 2 contained a body laid in supine position, SE-NW oriented. In graves no. 4 and 5, the skeletons were disturbed by subsequent interventions (Fig. 11.4, 6). The oval shape of the pits could be confirmed for two burials. In grave no. 1, two bone tools, a silex blade and two discs, one of stone and one of animal horn, perforated in the centre, were found (Fig. 12.1–5). A bone pendant and a silex blade were recovered from grave no. 2<sup>2</sup> (Fig. 12.6–7), while a small round vessel, an item made of deer antler, together with a silex blade were found in grave no. 6 (Fig. 12.8–10).

Since the publication of the find, the authors underlined the difficulty of dating the burials, which they ascribed to “the end of the Neolithic and Early Bronze Age” (OBERLÄNDER-TÂRNOVEANU – OBERLÄNDER-TÂRNOVEANU 1979, 64). However, Ion Motzoi-Chicideanu criticised the inaccurate publication and suggested more prudent dating to the Early Bronze Age, with possible analogies to Brăilița finds (MOTZOI-CHICIDEANU 2011, 212–213). Recently, after analysing the Cernavodă II finds from the Lower Danube, Alin Frînculeasa considered that the semilunar pendant is specific to Zhivotilovka group, dated to the final quarter of the 4<sup>th</sup> millennium BC (FRÎNCULEASA 2020c; POPOVICI 2020; MANZURA 2016, 69–70). The pendant disks found in grave no. 1 could also be similar to artefacts

<sup>2</sup> The artefacts are kept in the collection of Tulcea History and Archaeology Museum and are marked as found in grave no. 3.

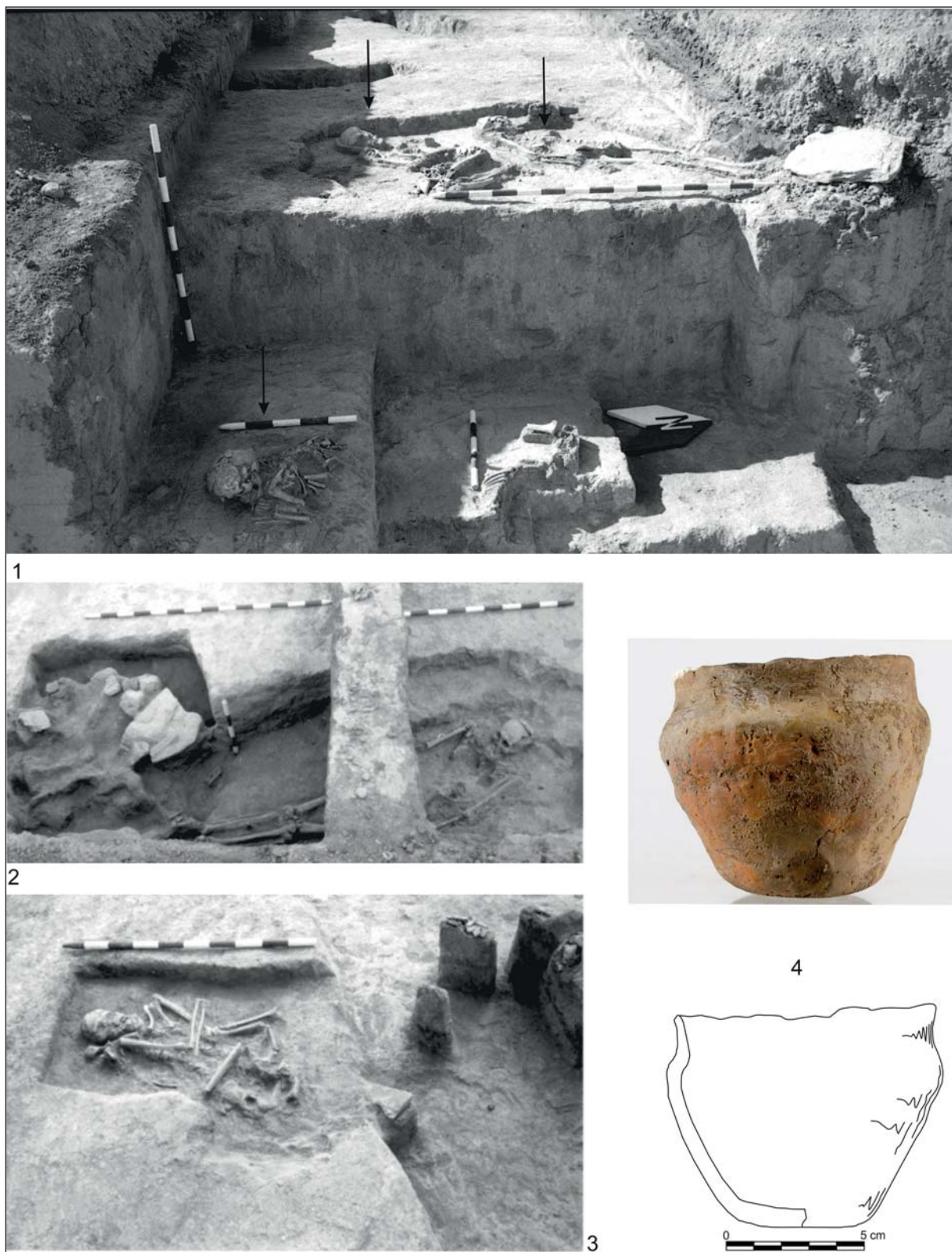


Fig. 10. Panduru 2000. 1–3. Photographs taken during the surveys (archives of ICEM Tulcea);  
4. Vessel found in grave no. 2



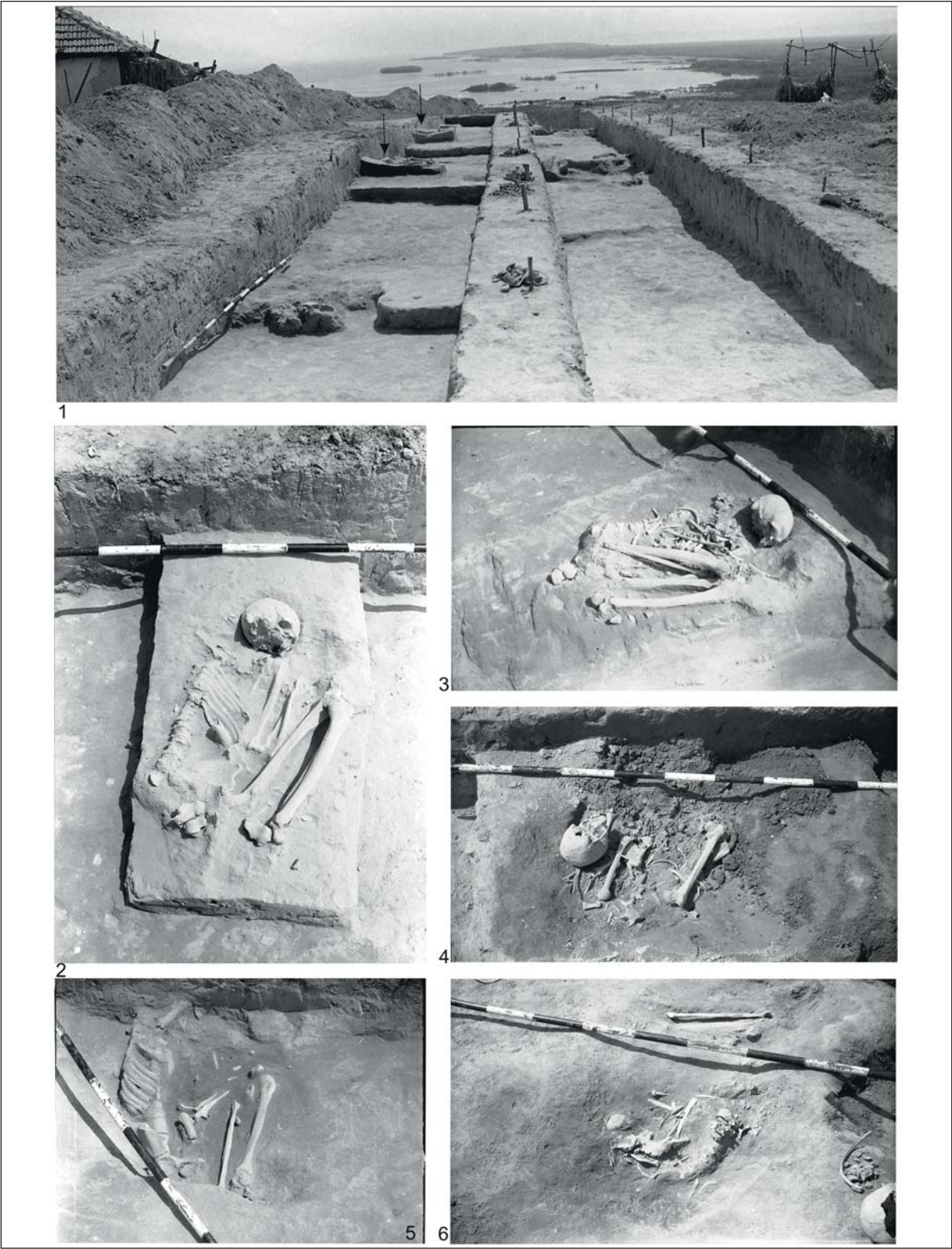


Fig. 11. Sarichioi–La Bursuci 1978. Photographs taken during the surveys (archives of ICEM Tulcea)



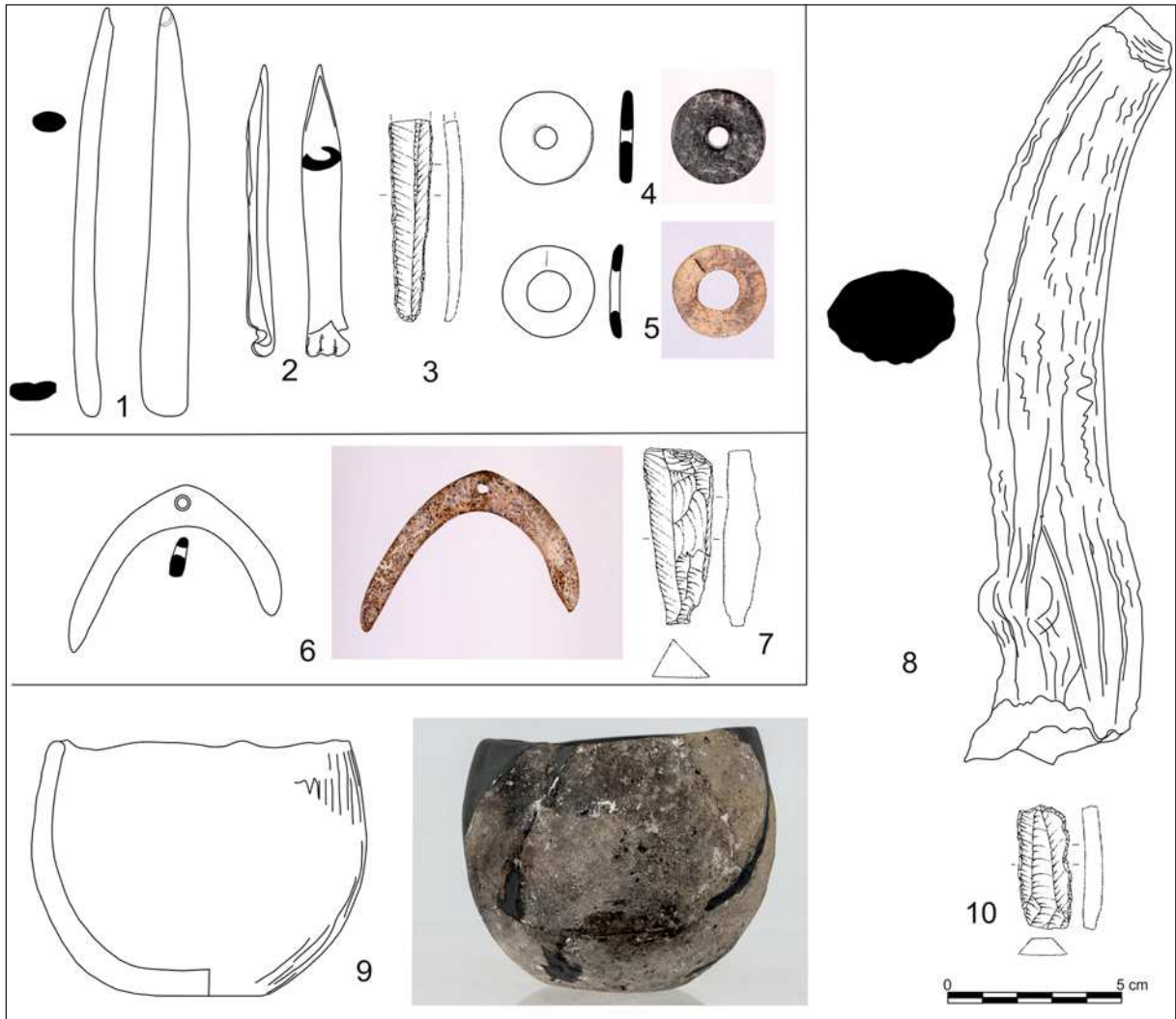


Fig. 12. Sarichioi–La Bursuci. Inventory of the graves: 1–5. Grave no. 1; 6–7. Grave no. 2 or 3; 8–10. Grave no. 6

recovered from graves ascribed to Mnogovalikovaya culture (SAVVA 1992, 41–45; HARTUCHE 2002, Figs 83–84; SCHUSTER 2018).

### 33. Smyadovo, Shumen reg., Bulgaria

In 2005–2008, at *Gorlomova koriya* spot, several inhumations assigned to both the Eneolithic and Early Bronze Age were investigated. Graves no. 19, 20, 26, and 27 were ascribed to the Bronze Age, as radiocarbon dating indicated the end of the 4<sup>th</sup> millennium and beginning of the 3<sup>rd</sup> millennium BC. Graves no. 19, 26 and 27 contained a single individual each, while five bodies were buried in grave no. 20. The individuals in graves no. 26 and 27 were laid flexed on the right side, E-W oriented. The body in grave no. 19 was laid flexed on the left side, W-E oriented. Four of the five individuals from grave no. 20 were in supine position, E-W oriented, while the fifth was in partial anatomical position. The grave goods consisted of clay vessels, silex, copper and bone artefacts (CHOHADZHIEV – MIHAYLOVA 2014, 14–22).

### 34. Stelnică, Ialomița County

An isolated grave with a silver hair ring is mentioned (MOTZOI-CHICIDEANU – OLTEANU 2000, 30).

### 35. Stoicani–Cetățuie, Foltești, Galați County

In 1949, while investigating a site with various inhabitation layers, a group of 15 inhumations was identified. The bodies were placed flexed on the left or right side, or in supine position. The use of ochre was mentioned in some instances. Grave goods were found only in graves no. 2, 3, 5, 7a and 12, consisting of a fragment of a stone axe, two clay vessels and two discoid bone buckles (PETRESCU-DÎMBOVIȚA 1953, 116–132). According to the stratigraphy, the graves are dug into the Usatovo inhabitation layer. However, the author of the find dated the inhumations to a later Usatovo horizon, contemporary with the settlements at Foltești and Stoicani – *the Hallstatt necropolis*. In the absence of radiocarbon dating and of grave goods with chronological value, the finds at Stoicani are rather difficult to date. Ion Motzoi-Chicideanu assigned part of the graves to Yamnaya group, while graves no. 3 and 7, where the discoid bone buckles were found, were dated to the Middle Bronze Age (Mnogovalikovaya group) (MOTZOI-CHICIDEANU 2011, 246; for arguments on the dating of the graves at Stoicani, also see FRÎNCULEASA *et al.* 2017; 2019).

### 36. Topoli, Varna reg., Bulgaria

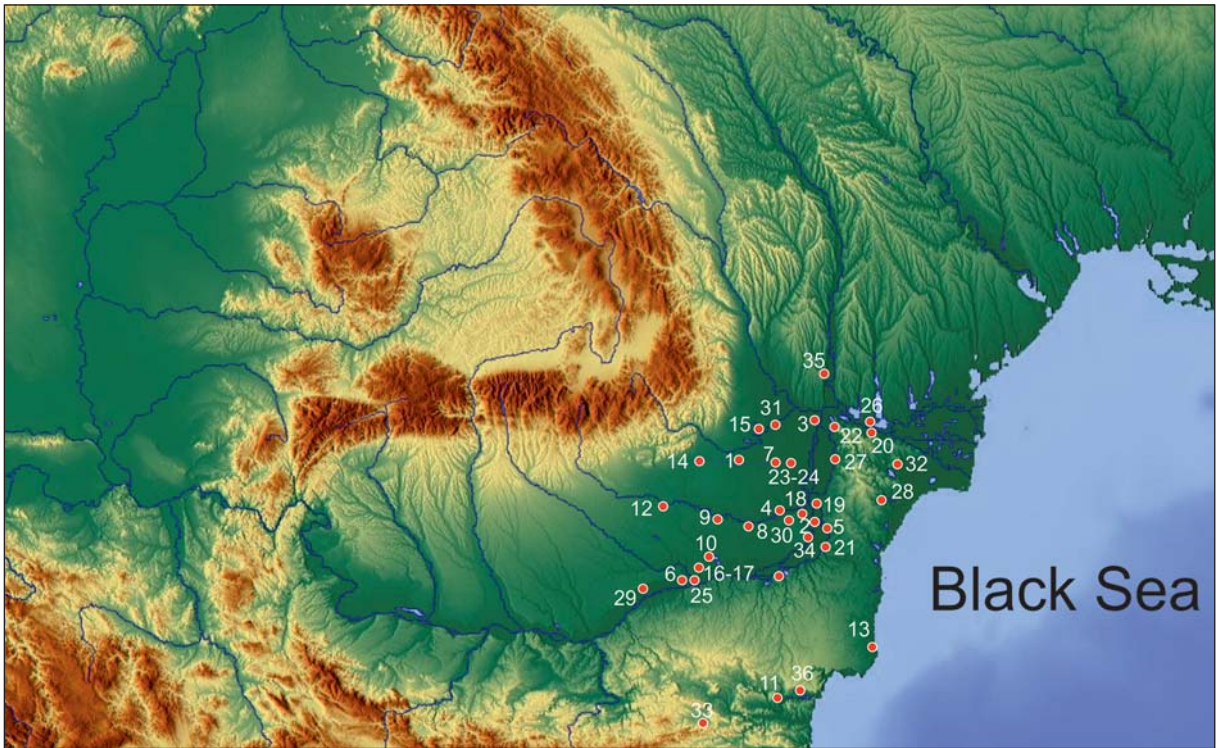
There is the mention of a necropolis with bodies laid flexed on the side, assigned to Ezerovo II group (TONČEVA 1981, 59).

\*

This brief catalogue shows that the graves investigated at Jijila are not a singular case. The majority of the similar discoveries occurred by chance or while investigating other sites, mostly from the Eneolithic. The necropolis from Brăilița, though not fully investigated, may indicate the possible size that such sites can reach. However, more often than not, isolated graves or small groups of up to 15 burials have been investigated.

Unlike the tumuli, which can be easily identified in the general landscape as funerary structures, flat necropolises have been found especially during surveys of archaeological sites from various periods, mostly Eneolithic *tell*-like settlements. Due to the absence of funerary inventory, earthen or stone structures, such sites are practically impossible to identify by mere surface investigations. Such necropolises are usually situated near bodies of water, on terraces or promontories, which probably corresponded to routes of communication or areas exploited for various natural resources, along rivers such as Ialomița, Buzău, Călmățui, but also along the Danube. Such is the case of necropolises at Brăilița, Orlovka and Isaccea, situated near a very busy crossing point, used throughout the ages (*Fig. 13*).

Another issue is the inaccurate dating of these finds, usually based on the shape of the pits, the position of the body and the scarce grave goods with chronological value. The above-mentioned catalogue includes only the items with most chronological value, which are extremely rare, but sometimes sufficient to constitute a landmark. The graves at Jijila show once again the importance of radiocarbon dating. In the absence thereof, it would have been nearly impossible to presume such a considerable chronological distance between the eight graves. Even if we have scarce chronological data in most cases, it is visible that human communities used such places for burials for long periods of time (over 1500 years). Practically, the relative and absolute chronology of these groups of flat graves is comparable to that of the tumular burials in the same area. The oldest burials date back to the end of



*Fig. 13. Flat necropolises and graves mentioned in the catalogue (cca. 3500–1500 BC):*  
 1. Bălteni; 2. Bordușani; 3. Brăilița; 4. Bucu; 5. Cernavodă; 6. Chirnogi; 7. Cireșu; 8. Ciulnița;  
 9. Crăsanii de Jos; 10. Curățești; 11. Devnya; 12. Dridu; 13. Durankulak; 14. Gherăseni;  
 15. Grădiștea de Jos; 16–17. Gumelnița; 18. Hagieni; 19. Hârșova; 20. Isaccea; 21. Izvoarele; 22. Jijila;  
 23–24. Lișcoteanca; 25. Oltenița; 26. Orlovka; 27. Ostrov; 28. Panduru; 29. Pietrele; 30. Platonești;  
 31. Râmnicelu; 32. Sarichioi; 33. Smyadovo; 34. Stelnica; 35. Stoicani; 36. Topoli

the Eneolithic (Cernavodă I: ~3800–3500 BC), while the most recent appear to be contemporary with Mnogovalikovaya horizon (~2200–1800 BC).

## Conclusions

As a result of the investigations carried out in 2018–2019, a group of eight inhumations was studied in a rather small area. The radiocarbon dating for graves no. 1, 2, 5–8 indicates a very long period of time between the earliest and the most recent deposition. Graves no. 5, 7, and 8 (probably no. 3, as well) could be dated to end of the 4<sup>th</sup> millennium – early 3<sup>rd</sup> millennium BC. These four burials correspond to a time when Cernavodă II culture is documented at the Lower Danube.

Grave no. 1 could probably be connected to a stone structure partially overlapping the cranium. Unfortunately, the funerary structure was largely damaged by the pits dug during the Roman Period and archaeologists could not determine the connection with the deposited body. The radiocarbon dating indicates the middle of the 3<sup>rd</sup> millennium BC, the late period of the Yamnaya phenomenon or even contemporary to the Katakombnaya phenomenon at the Lower Danube. The most recent are graves no. 2 and 6, which can be dated to the first part of the 2<sup>nd</sup> millennium BC, corresponding to a horizon where Mnogovalikovaya culture is documented in the area. This horizon is contemporary with a series of flat

graves and secondary tumular burials in Wallachia. Part of the burials included pottery specific to Tei culture (FRÎNCULEASA 2020b).

The frequency of depositions throughout almost 1500 years might indicate the existence of a tumulus, but no such funerary structure was identified. It is possible that the investigated tombs represent or are part of a flat necropolis, whose size is difficult to approximate or study by geophysics research, due to the many recent gas, telephone and power installations in the area.

As mentioned above, at the Lower Danube both flat and tumular burials have been found. Unfortunately, many of the finds are not accurately published, most frequently only briefly mentioned. The chronology of the known funerary depositions in tumular or in flat necropolises is similar. At least at the current status of research, the deposition of the bodies can be considered very similar. However, up to now, no mats or textile materials or wooden beams have been found in flat necropolises. There are also differences in the setup of the pits, as pits with steps or catacombs have only been found in tumular burials.

In some instances, in the vicinity of the necropolises mentioned in the catalogue, there are also tumuli of various sizes (e.g. Orlovka, Isaccea, Sarichioi, Ciulnița, etc.), which could have been contemporaneous. However, we cannot issue any hypotheses regarding the selection of the burial place and the role of the flat necropolises compared with the tumular burials. It is interesting that these areas had kept their purpose and significance for a very long time, despite the assumed movements of the populations, as argued in the archaeological texts dedicated to the end of the Eneolithic and Early Bronze Age. Though not preserved, it is possible that these areas used to bear special markings.

The necropolis at Jijila, as well as the contemporary flat necropolises mentioned in this paper point to a complex funerary behaviour of the human communities in the Lower Danube region in the Early Bronze Age, usually known for their tumulus burials. Our knowledge of this matter could actually be lacking, considering the small number of investigated necropolises/tumuli and their publication (PREDĂ-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 86–87 – lists 177 investigated tumuli in Romania, with 714 burials over a period of at least 1000 years).

## Acknowledgements

The authors express their gratitude to Carmen Bem, archaeologist at the National Expressway and Road Infrastructure Company (CNAIR), for her support during the archaeological research. Special thanks are also conveyed to Mrs. Mihaela Bleoancă, Florin Ciulavu, Ioana Mureșan and Lucian Mureșan, who took part in the archaeological excavations at Jijila in 2018–2019. The authors also avail of this opportunity to thank colleagues Serghei Agulnikov, Radu Băjenaru, Alin Frînculeasa and Bianca Preda-Bălănică for their valuable advice and bibliographical guidance. Special acknowledgements are due to Mrs. Cristina Caprini, for translating this paper in English, and to Mr. Gabriel Dincu, who provided the photographs of the artefacts found at Panduru and Sarichioi, as well as the scanned images from the photo archives of the Eco-Museum Research Institute in Tulcea.

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# Transylvania. Within or outside of the Yamnaya world?

FLORIN GOGÂLTAN

To Prof. Dr. Blagoje Govedarica

## Abstract

*In this article, I aim to present the stage of research regarding the period between the end of the 4<sup>th</sup> and the first half of the 3<sup>rd</sup> millennium BC in the eastern part of the Carpathian Basin (western Romania and Transylvania) and if this geographic area has been connected to the Yamnaya world or not. Transylvania and the North-Pontic area are two regions with different historical realities. Even if they are not far from each other geographically, they only met directly occasionally. The Eastern Carpathians were never a tight barrier, but still they divided two worlds with distinct cultural identities.*

*In the Romanian Banat is certain the presence during ca. 2800–2600 cal BC of Yamnaya burials (Bucova Pusta IV, Bucova Pusta IX and probably Bodo) in Late Baden-Kostolac and Early Makó-Kosihy-Čaka cultural environments. From the point of view of the relative chronology, this period can be assigned around the beginning of the Early Bronze Age (EBA I) in this region.*

*Regarding the tumuli in southwestern Transylvania, even if dozens of small necropolises are known, as well as numerous isolated tumuli, very few of them have been researched systematically. The last 30 years of research have led to the firm conclusion that the vast majority of them are to be dated later than the Coțofeni Culture, characterising the groups from the beginning of the Bronze Age (EBA I-II). Only the tumuli in Câmpia Turzii, Cipău, Răscruți, Tureni, Agriș, Silivașu de Jos were attributed to the Yamnaya communities. There is no certain proof of the Yamnaya presence in the central and southeastern parts of Transylvania. Anthropomorphic stone stelae from Transylvania, along with a series of objects that prove a certain social status are also found in the Yamnaya world, but can also be representations of the social status of elites in a trans-regional dialogue. Therefore, we cannot assess the intensity of collective contacts between Transylvania and the North-Pontic region.*

**Key words:** Transylvania, end of the 4<sup>th</sup> and the first half of the 3<sup>rd</sup> millennium BC, Yamnaya world, funerary mounds, anthropomorphic stone stelae

My first experience in the field of archaeology, back in my student days, was the research of the large tumulus in Tureni, which is part of a necropolis not far from Cluj Napoca, the largest city in Transylvania (Fig. 1.31). The excavation of this tumulus has not yet been completed – and it started in 1985 (LAZAROVICI – KALMAR-MAXIM 1992a, 956–958; 1992b, 998, 1000) (Pl. 1.2). Only a sketched drawing has been published regarding the feature (Pl. 1.1) (ROTEA 1993, 74–75, Fig. 3). What I have been taught during the final years of the communist regime was that it was not worth investing good money and time in excavating a tumulus only to discover a skeleton, some ochre and, in the best of cases, some flint tool. This was the context in which generations of future archaeologists were educated in Romania and the results are visible over the years (GOGÂLTAN 2016b; FRÎNCULEASA *et al.* 2017b, 25–27; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 86–87, Tab. 1).<sup>1</sup>

<sup>1</sup> In order to fit into the typographic requirements of the volume, the older bibliographical references related to the topic of interactions between Transylvania and the North-Pontic world between the 5<sup>th</sup> and 3<sup>rd</sup> millennia BC



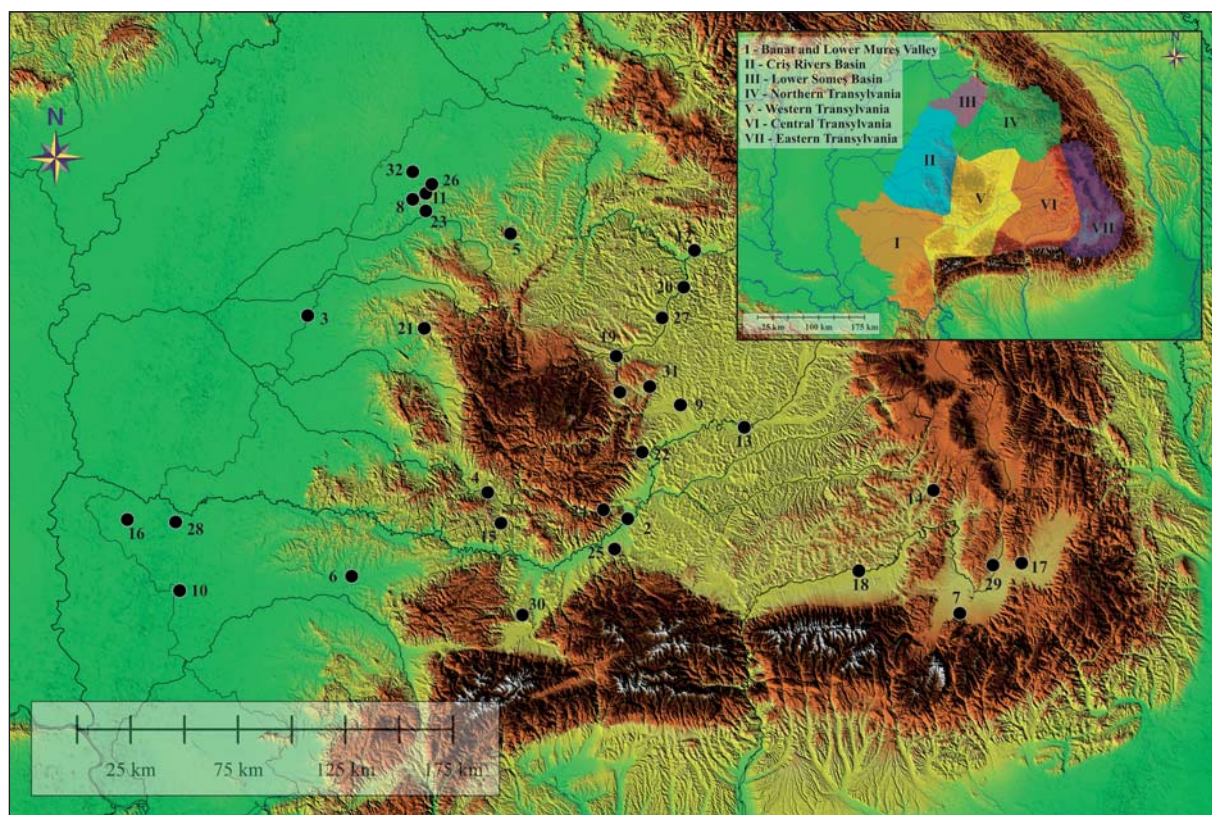


Fig. 1. 1. Agriș, 2. Alba Iulia, 3. Ateaș, 4. Baia de Criș, 5. Bădăcin, 6. Bodo, 7. Brașov, 8. Buduslău, 9. Câmpia Turzii, 10. Checea, 11. Cheț, 12. Ciceu-Mihăiești, 13. Cipău, 14. Crăciunel (Ocland), 15. Dealul Mare, 16. Dudeștii Vechi, 17. Ereșteghin (Moacșa), 18. Făgăraș, 19. Florești, 20. Gherla, 21. Izbucu Topliței, 22. Livezile, 23. Marghita, 24. Meteș (jud. Alba), 25. Pianu de Jos, 26. Pir, 27. Râșcruci, 28. Sânpetru Mare, 29. Sfântu Gheorghe, 30. Silivașu de Jos, 31. Tureni, 32. Vășad

The chance that the archaeology of tumular monuments had, was reborn after 2000 when Romania adopted a legislation of cultural patrimony protection fashioned after the European model (FRÎNCULEASA *et al.* 2017a, 533–534; GOGÂLTAN 2019, 874). The economic development of some regions, the presence of certain tumuli, and the destruction danger they faced (FRÎNCULEASA 2020a), but especially the interest that some of our colleagues have taken in the research of such features, gave a new chance to the knowledge of archaeological realities from the end of the 4<sup>th</sup> millennium BC and the first half of the subsequent millennium (FRÎNCULEASA – PREDA – HEYD 2015; AILINCĂI *et al.* 2016; BOLOHAN – LAZANU 2018; FRÎNCULEASA *et al.* 2019a; 2019b; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020; DIACONESCU 2020). Equally important was the publishing/republishing or reconsideration of older discoveries (FRÎNCULEASA *et al.* 2017b).

In this article, I aim to present the stage of research regarding this period in the eastern part of the Carpathian Basin (western Romania and Transylvania) and if this geographic area has been connected to the Yamnaya world or not. From a historical perspective, Transylvania only encompasses the inner Carpathian area, as the western part of Romania, an integral part of the Pannonian Plain, includes several other provinces (Banat, Crișana, Maramureș) (Fig. 1). As we shall see, the two regions (Transylvania

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can be found in GOGÂLTAN 2011, GOGÂLTAN 2016a, and GOGÂLTAN 2016b. Therefore, I will mainly make reference to papers published after 2015.

and West Romania), so different from a geographic perspective, also followed distinct historical developments (GOGÂLTAN 2015; 2019).

My interest in prehistoric Transylvania and the North-Pontic world started when I took part in a conference held at the Humboldt-Kolleg in Tbilisi/Georgia in 2007. According to the suggestions of the organisers, in my presentation I chose to focus on the contacts between the two areas during the Copper Age and the Bronze Age. The limited size of the printed paper, and the complexity of the topic made me deal only with the first contacts between Transylvania and the North-Pontic world that took place during the early and middle stages of the Copper Age, ca. 4500–3500 BC (GOGÂLTAN 2011). For the third meeting of the Alexander von Humboldt alumni from the Black Sea region held in Varna, Bulgaria, I prepared a presentation titled “Die Beziehungen zwischen Siebenbürgen und dem Schwarzmeerraum in der Kupfer- und am Anfang der Bronzezeit (ca. 3500 – ca. 2500 v.Chr.)”. The Romanian version of the article was published shortly afterwards, while the German one saw the light of print many years later when the data it contained were, to a certain degree, obsolete (GOGÂLTAN 2016a). In another article relatively recently published in Romanian language, I have analysed the Romanian paradigm of Indo-Europeanization (GOGÂLTAN 2016b). Even if my current interest lies in topics such as the Bronze-Age tells or the onset of the Late Bronze Age mega-sites/forts, I am still interested in the recording of the funerary mounds in West Romania. In the summer of last year, I also organised Wolfgang Haak’s visit to Transylvania. Through the ERC project he is a part of, we were able to recover over 100 teeth from the necropolises of the Bronze Age. Unfortunately, only one or two dental remains have been preserved from tumular necropolises, as the rest were lost due to various other projects that did not lead to any scientific results. Today, only investments in new archaeological research can bring Transylvania and West Romania back on the map of modern anthropological investigations (BECK – CIUGUDEAN – QUINN 2020). But let us now see what is known about the local communities around the year 3000 BC and the contacts they had with the North-Pontic world.

For archaeologists, both in the past and the present, migrationism is the most often discussed model of the East-West contacts (recently FRÎNCULEASA – PREDA – HEYD 2015; ALEXANDROV – KAISER 2016; KAISER 2016; HEYD 2017; HANSEN 2019; etc.). The aDNA studies brought new arguments to support this theory (HAAK *et al.* 2015; KRISTIANSEN *et al.* 2017; LINDERHOLM *et al.* 2020; etc.). However, there are also voices advocating for a more nuanced approach of the socio-cultural transformations of local cultures in Central Europe following the impact of Yamnaya communities (KLEJN *et al.* 2017; FURHOLT 2018).

Since the 1920s, Vere Gordon Childe has supported the thesis envisaging the existence of some connections between the North-Pontic world and its western neighbours. In his famous work *The Danube in Prehistory*, Childe revisits the topic, referring to the area of interest here. According to him, a series of “intrusive cultural groups” led to the onset of mounds in Hungary that contained skeletons in crouched position and red ochre. These mounds “indubitably attest relations between the Hungarian plain and South Russia across the Carpathians” (CHILDE 1929, 208). Other mounds from Transylvania that contained skeletons in crouched positions could be connected to the graves with ochre discovered along the Tisza.

Transylvania and the North-Pontic area are two regions with different historical realities. Even if they are not far from each other geographically, they only met directly occasionally. The Eastern Carpathians were never a tight barrier, but still they divided two worlds with distinct cultural identities. Their different geographic environments had marked consequences on their types of habitats, economic activities, social development, and other elements. The rich natural resources of Transylvania (salt, copper, gold) also played a role in this development.

For some researchers, the cyclical arrival of populations from the steppes in the Carpathian Basin must be interpreted as having an ambivalent role: they brought destruction but also innovations that conveyed essential contributions to the subsequent development of the local civilisations (HÄNSEL 1998). For others, the situation was quite the opposite: the Carpathian-Balkan culture had a marked role in the formation of the new social and cultural realities of the steppe world in the beginning of the Copper Age (GOVEDARICA 2004, 366). What is the truth of the matter?

In my opinion, the existence of contacts between the communities in Transylvania and the North-Pontic world could be theoretically structured in two ways: collective and individual contacts. Collective contacts envisage the peaceful arrival of restricted groups of individuals across the Carpathians from or towards Transylvania. On this level, the effects could only have been local in nature. Naturally, one cannot exclude short or long violent campaigns that could have only had similar effects. The seasonal movement of livestock or transhumance, another form of collective contact, that does not always leave archaeological traces, could have only taken place from Transylvania towards the western and north-western shores of the Black Sea. Nevertheless, the massive migration of certain communities has had the most profound impact (GOGÂLTAN 2011, 102–103, Abb. 1). Even if, according to Vere Gordon Childe or Marija Gimbutas, the issue of the Indo-Europeans who presumably arrived in successive waves to Central Europe is regarded today in a more nuanced manner, most specialists believe that the appearance of certain tumuli and of specific mortuary inventories in Bulgaria, Romania, Serbia, and Hungary is the effect of the direct presence of a population from the steppes in these regions. Individual connections imply the circulation of goods between the two areas, such as primary materials and finished artifacts. One can also add other forms of limited contacts between the two worlds: the private travels of initiates or matrimonial relations. The collective and individual contacts between the two areas facilitated the two-way transfer or diffusion of technological innovations, economic activities, or social structures (HEYD 2016).

In 1950, presenting the funerary stray finds made in Bogonos and Broșteni, Mircea Petrescu-Dîmbovița (PETRESCU-DÎMBOVIȚA 1950, 110) used for the first time in Romania the term “*yamy-type* burials” coined by Vasili A. Gorodtsov at the beginning of the 20<sup>th</sup> century (KAISER 2019, 24) and then adopted by Vere Gordon Childe (“*yamno* graves”) (CHILDE 1942, 130–131).

Some specialists from the ex-Soviet area, but also others from Bulgaria and lately Romania as well, believe that the appearance of the Yamnaya communities in the North-Pontic environment (before 3000 BC) and then their spreading westwards already marks a new age, i.e. the Bronze Age (KAISER 2019, 19–24).

The so-called Budzhak/Bugeac culture of the Yamnaya circle proved to be very mobile (IVANOVA – TOSCHEV 2015, 25–29, Figs 6–8). The carriers of this cultural manifestation are responsible for the second massive direct contact between the North-Pontic world and the Carpathian Basin. Outside of its area of origin, typical Yamnaya graves have been researched in Moldavia, Dobrudja, Bulgaria, Wallachia and further west, in Banat, Crișana and East Hungary (FRÎNCULEASA – PREDA – HEYD 2015; ALEXANDROV – KAISER 2016; BEDE 2017; DANI *et al.* 2017; FRÎNCULEASA *et al.* 2017b, 114–138, 155–162; ALEXANDROV 2019; KAISER 2019, 191–233; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, Fig. 9; KOLEDIN *et al.* 2020; DANI 2020; ALEXANDROV 2020a, 147–154, 157–159; VAGALINSKI 2020).

Nowadays the Yamnaya phenomenon in the western-Pontic area is well anchored chronologically at the end of the 4<sup>th</sup> and during the first half of the 3<sup>rd</sup> millennium BC. Older or more recent archaeological research enabled identifying the characteristics of the rite and funeral ritual of these communities (FRÎNCULEASA – PREDA – HEYD 2015, 82–84; ALEXANDROV – KAISER 2016, 364–365). According to Alin Frînculeasa, these are: „the earthen mound, the rectangular burial pit, the supine position of the deceased



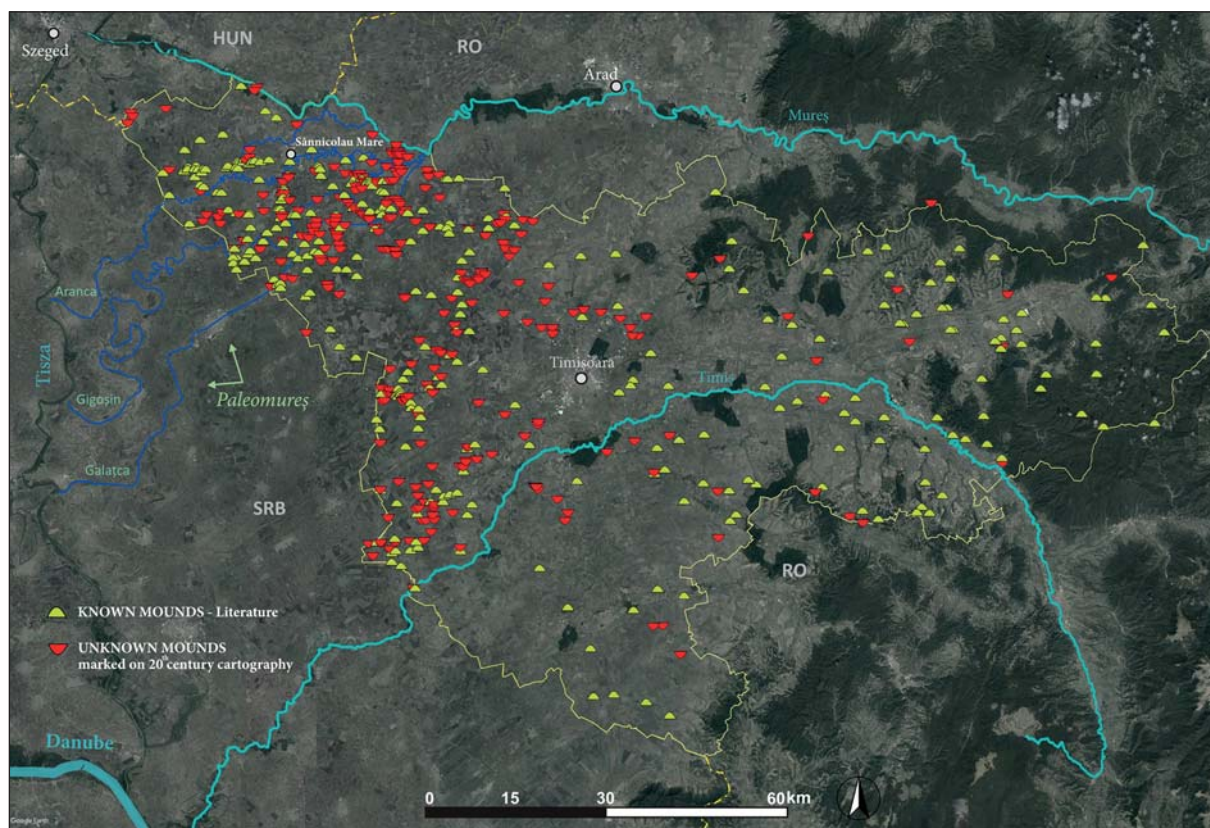


Fig. 2. The mounds in the low plain of the Romanian Banat (after FLOCA 2017 with modifications by C. Floca, 2021)

with the lower limbs bent and raised at the knees, the west–east orientation, the presence of ochre (lumps and/or sprinkled on the body), the usual absence of grave goods” (FRÎNCULEASA 2019, 131, Fig. 1).

Only a few discoveries made in the western part of Romania are worth being discussed in this context. Endre Orosz’s older excavations, performed in the end of the 19<sup>th</sup> century in one of the tumuli from Checea (Fig. 1.10), have led to the discovery of an inhumation grave at the depth of 0.4 m, containing a skeleton in crouched position. The feature was attributed, with due caution, to the Yamnaya communities. Ion Stratan’s rescue excavations in Bodo (Fig. 1.6) are defined with a somewhat higher degree of certainty. A skeleton with crouched legs and the head oriented eastwards was discovered inside a mound that measured 44 m in diameter and 3.5 m in height. Among the inventory of this feature, the archaeologist mentioned two flint flakes deposited between the palms of the deceased and two atypical pottery fragments. Red ochre had been scattered on the bottom of the pit. Numerous pottery fragments belonging to the first phase of the Coțofeni Culture were found in the mantle of the tumulus, in secondary positions. According to most specialists, the grave belongs to the Yamnaya Cultural Complex. To the same phenomenon one can most likely attribute some of the many mounds mapped by Florin Medeleț in the Romanian Banat (GOGÂLTAN 2016a, 421–422 with the old literature).

The fact is attested by a mound recently researched in Bucova Pusta near the Dudeștii Vechi commune in the western extremity of the Romanian Banat (Fig. 1.16). A tumulus had been erected there over a Starčevo-Criș habitation. In 2014, Reiko Krauß and his team found an inhumation grave with an older woman’s skeleton in crouched position. She had been laid, with the head to the west, inside a wooden construction. The funerary inventory consisted of a piece of red ochre (Pl. 2.1). An AMS date

indicates the 2892–2666 cal BC period (KRAUß *et al.* 2016, 298–302). It is possible that this grave is contemporary to an older discovery, made in the beginning of the 20<sup>th</sup> century (in 1907) by amateur archaeologist Gyula Kisléghi Nagy in the tumulus called “Hunca Mare” (GOGÂLTAN 2016a, 421–422 with the old literature).

More than 30 years after the publication of an overview on the burial mounds from the Romanian Banat (MEDELEȚ – BUGILAN 1987), systematic research dedicated to the mapping of tumuli in West Romania has been recently conducted. Historical maps are a precious tool in such research (FRÎNCULEASA 2020a, 51–54). The most important source of this kind is the so-called Josephine Map (a Habsburg topographic survey) created in 1769–1772 (*Josephinische Landesaufnahme*)<sup>2</sup> to which can be added the 19<sup>th</sup> century maps (*Franzische Landesaufnahme* [1819–’69]<sup>3</sup> and *Franzisco-Josephinische Landesaufnahme* [1869–’87])<sup>4</sup> and the maps after World War I (*Planurile Directoare de Tragere* [1918–’59])<sup>5</sup>. Satellite images are equally useful. By combining these sources and employing the available field researches, Cristian Floca was able to obtain a suggestive image of the dynamics of the tumular phenomenon in Romanian Banat (*Fig. 2*) (FLOCA 2017). In addition to field research in the Teremia



*Fig. 3. Sânpetru Mare (after DIACONESCU et al. 2017)*

<sup>2</sup> <http://mapire.eu/en/map/firstsurvey/?layers=osm%2C1%2C73&bbox=2234479.6728204736%2C5627125.8765858775%2C2491308.087858666%2C5750342.366181581>

<sup>3</sup> <http://mapire.eu/en/map/secondsurvey/?layers=osm%2C5%2C42&bbox=996738.1473521366%2C5480325.179001058%2C3051365.467657674%2C6466057.095766691>

<sup>4</sup> [http://mapire.eu/en/map/hkf\\_75e/?layers=osm%2C8&bbox=1117814.4001558563%2C5418182.095580353%2C3172441.7204613937%2C6403914.0123459855](http://mapire.eu/en/map/hkf_75e/?layers=osm%2C8&bbox=1117814.4001558563%2C5418182.095580353%2C3172441.7204613937%2C6403914.0123459855)

<sup>5</sup> <http://geo-spatial.org/harti/>





*Fig. 4. Buduslău (photo G. Fazecaș)*



*Fig. 5. Ateaș (photo F. Gogâltan)*



*Fig. 6. Vășad (photo G. Fazecaș)*



*Fig. 7. Pir (photo E. Apai)*



Mare area, one can also notice the mapping of mounds in the area of the Sânpetru Mare locality (Figs. 1.28; 3) (DIACONESCU *et al.* 2017).

Other earthen mounds were recently identified during field research carried out for the General Urban Plans of several communes in the plain region of Bihor County: Marghita, Buduslău (Fig. 4), Cheț (Fig. 1.8, 11, 23) (FAZECAS – MARTA 2015; MARTA – FAZECAS 2018). These are added to the mounds identified previously, such as those from Ateaș (Figs. 1.3; 5) (CRIȘAN – MARTA – GHEMIȘ 1997), Vășad (Figs 1.32; 6) or Pir (Figs 1.26; 7), located near the Hungarian border.

In the absence of archaeological excavations, one can only presume that these mounds are more or less contemporary to those in Serbian Banat (KOLEDIN *et al.* 2020 with the old literature) or Eastern Hungary (BEDE 2017; DANI *et al.* 2017; DANI 2020 with the old literature). No further clarifications can be brought compared to the already existing information regarding their chronological and cultural relations with local communities (GOGÂLTAN 2015, 56–62 with the old literature; DIACONESCU 2020, 42). The conclusion is as follows: the certain presence during ca. 2800–2600 cal BC of Yamnaya burials (Bucova Pusta IV, Bucova Pusta IX and probably Bodo) in Late Baden-Kostolac and Early Makó-Kosihy-Čaka cultural environments. From the point of view of the relative chronology, this period can be assigned around the beginning of the Early Bronze Age (EBA I) in this region.

Regarding the tumuli in southwestern Transylvania, even if dozens of small necropolises are known (containing between 3–4 up to 16 mounds in Poiana Aiudului or 26 in Silivașu de Jos), as well as numerous isolated tumuli, very few of them have been researched systematically (GOGÂLTAN 2016a, 425 with the old literature). According to Dragoș Diaconescu, out of more than 600 mounds from western Transylvania and Romanian Banat only 63 mounds were investigated by archaeological excavation. Four are assigned to Coțofeni culture, eight to Yamnaya/Ochre Grave Culture and 27 to the Livezile-Bedelev/Șoimuș/Copăcenii cultural groups (DIACONESCU 2020, 20). Let us further analyse the discoveries assigned to the Yamnaya communities in Transylvania and the current knowledge regarding the local environment with which they are supposed to have interacted.

A tumulus investigated in 1967 near the train station in Câmpia Turzii (Fig. 1.9) was attributed with a relative degree of certainty to this “population wave from the steppes”. Unfortunately, the excavations performed there have not been published to an acceptable standard. Also, the tumulus has not been entirely excavated. One knows that it measured ca. 50 m in diameter and 1.80–1.85 m in height. Today, the tumulus is strongly flattened. The pit of a grave covered with two layers of beams was discovered in the central area of the mound. The grave contained a man’s skeleton oriented south-west to north-east. The deceased had been placed lying on his back, with the arms slightly distanced from the body and with the legs slightly bent at the knees; the legs had subsequently fallen to the sides, leading to the so-called “frog position”. The body had been wrapped in an organic material. No inventory objects have been found. According to its description and illustration, the grave has a good analogy in the funerary discovery made in Kétegyháza, in East Hungary. Other tumuli were also researched over the subsequent years, but data are limited to statements such as “an Eneolithic grave with ochre” was found in the central area of the tumulus in Cipău (Fig. 1.13) or that a “grave with ochre” and a small pottery fragment were identified in the centre of the largest tumulus in Răscruci (Fig. 1.27) (GOGÂLTAN 2016a, 423 with the old literature).

Recently, three more discoveries were added to the list of Yamnaya features in Transylvania. Firstly, there is the mound from Tureni “La Furci/Acăstăi”, Cluj County, mentioned in the beginning of this paper. Showing impressive dimensions, 40–42 m in diameter and 3.50–4 m in height, the mound is part of a necropolis comprised of 6–7 mounds located on the ridge of the Ghicenghe Hill, at a maximum altitude of 690 m. The 1986 excavations have led to the identification of a stone ring with the diameter of approximately 30 m and 1 m wide as well as several groups of stones (LAZAROVICI – KALMAR-MAXIM



*Fig. 8. Agriș (photo V. Stan)*

1992a, 956–958; 1992b, 998, 1000). Subsequent research has confirmed that in the massive mantle of the mound, built of local limestone (some over 150 kg), there are structures on which the deceased have been laid. The so-called grave 3 is noticeable, a grave with ochre placed in the centre of the mound at a depth of -1.30 m, containing an individual lying supine with the knees raised and accompanied by two flint pieces (*Pl. 1.1*) (ROTEA 1993, 75, Fig. 3). In the opinion of Alin Frînculeasa and colleagues, given the posture and orientation of the individual as well as the presence of ochre, the burial shows a typical Yamnaya ritual (FRÎNCULEASA *et al.* 2019b, 47).

To this discovery one can add a double burial unearthed in a mound located on Măgura Agrișului (*Fig. 1.1*), which in the opinion of Dragoș Diaconescu, fulfills all the characteristics of the Yamnaya Culture graves, except for the presence of ochre (DIACONESCU 2020, 18, footnote 14). The information was taken from a publication addressed to those passionate about myths and legends circulating in Transylvania (DIACONESCU 2012). After contacting the researcher who conducted the survey and research at Agriș, I can bring some clarifications, the findings will be published later on.<sup>6</sup> On the occasion of the extension of a stone quarry on the Agriș hill, located on the administrative territory of Agriș village, Iara commune, Cluj County, archaeological layers containing habitation traces of the Coțofeni (Late Copper Age) and Copăcenii communities (beginning of the Early Bronze Age) were disturbed. On the ridge of this hill, at an altitude of 800 m, during the field research conducted in 2009 several burial mounds were identified (*Fig. 8*).

One of them, with a diameter of 20 m and a height of 2.10 m, was explored with a section of 7.90×1.50 m that ended 3 m away from a topographic reference point located on the top of the mound. The mantle of the mound was raised with earth brought from the plateau around the mound, containing

<sup>6</sup> I kindly thank Vasile Stan for the information.

ceramic fragments of the Coțofeni culture. At the base of the mound a rectangular grave pit was outlined, with dimensions of 178×ca. 80 cm (its northern side was outside the excavated section), vertical walls, which was dug up to a depth of approximately 30 cm from the ancient surface. The grave pit was oriented on the west-east direction and contained two adult individuals placed with the head westwards, without any grave goods. The bio-anthropological determination conducted by Dr Szilárd Gál led to the identification of a man aged 35–40 years and a height between 1.73–1.80 m. The second individual was a woman aged 23–25 years (*Pl. 2.3*).

The research performed on the four tumuli in Silivașu de Jos (2006–2017) (*Fig. 1.30*) has also been recently published (DIACONESCU – TINCU 2016; DIACONESCU 2020, 20–24; HEGYI *et al.* 2021). The analysis of the pottery material, of stratigraphic relations, and of the eight AMS dates have allowed for the identification of a chronological horizon between 3322 and 3062 cal BC for the stage of the Coțofeni IIIb-type features (cremation graves) and between 2810 and 2642 cal BC for the inhumation graves (DIACONESCU – TINCU 2016, 114). The appearance of this new burial rite and ritual in southwestern Transylvania (individuals lying supine, oriented westwards) would be due to the presence of Yamnaya newcomers (*Pl. 2.2*) (DIACONESCU – TINCU 2016, 115; DIACONESCU 2020, 23), an opinion supported by other researchers as well (PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 96). Research conducted here has established another extremely important fact: the existence of an earthen mound dating from a Coțofeni IIIb horizon (DIACONESCU 2020, 23, 42–43).

In 2018, one of the 17 mounds of the necropolis from Dealul Mare “Vârful Pietrei”, Vălișoara commune, Hunedoara County (*Fig. 1.15*), was excavated (SCHUSTER *et al.* 2019). The information is still scarce, being the subject of an unpublished doctoral thesis (BLEOANCĂ 2019). The site is located on the southern slope of the Metaliferi Mountains at an altitude of approximately 700 m. The mound had the dimensions of 9.80×9.20 m and a maximum height of 0.85 m, and the mantle was built of stones. Four inhumation burials were discovered. Only in the main burial the bones were in anatomical position, the deceased lying crouched on the side. It is worth mentioning the discovery of a copper hair ring coated with golden sheet, a variant of the Leukas type (VASILEVA 2017; ALEXANDROV 2019, 85–86). Based on the grave goods the mound was dated the Early Bronze Age in the region, following a late Coțofeni sequence (IIIc).

A particular situation has been identified in Florești, near Cluj, in the middle of the distribution area of the tumuli with stone mantle. The 2006–2007 rescue excavations have led to the identification of three rings made of coarsely cut (lime)stone. Several inhumation graves were discovered inside these stone rings, with skeletons in crouched positions, some in stone cists, but no detailed data are available. In a single case, a general photograph was published as well as an anthropomorphic stela made of stone that had been found on the edge of the ring. A crouched individual in a grave attributed to the Copăceni Group was dated between 2500–2400 BC (ROTEA *et al.* 2014, 31). This discovery proves to be novel for the area of Transylvania. No analogy for the funerary discoveries made in Florești is yet known for the western distribution area of the Yamnaya phenomenon. Stone rings are, nevertheless, known from the entire Yamnaya world, such as those in Dobruđa, in Tariverde, Independența, and Mihai Bravu. The Yamnaya communities also used to place stone anthropomorphic statues on such funerary monuments. One must, however, observe that all these elements are also characteristic of the previous Usatovo stage (GOGÂLTAN 2016a, 429–430 with the old literature).

The last 30 years of research of the tumuli in southwestern Transylvania have led to the firm conclusion that the vast majority of them are to be dated later than the Coțofeni Culture, characterising the groups from the beginning of the Bronze Age (EBA I-II). Various names have been advanced for these groups, such as Șoimuș, Livezile, or Copăceni, however their cultural content is still far from being satisfactorily defined. One can now state that this funerary behaviour is different than the one



attested for the western Yamnaya communities. The tumuli are much smaller (diameters below 10 m and height below 1 m), located on high-ground spots (between 400 and 1000 m in altitude) that provide good visibility. They generally have a round stone mantle. The funerary rite and ritual are also different to those of the Yamnaya. First of all, they have no rectangular burial pit, no wooden structures, and the characteristic supine position of the deceased with the lower limbs bent and raised at the knees is also missing. The dead were buried in contracted position, on the left or right side, with different positions of the arms. A large number of burials contain bones that are not in anatomical connection, suggesting practices of post-mortem body manipulation. In the cases where deceased are in anatomical position, they are oriented predominantly on the north-east – south-west or east-west directions. In most cases, grave goods are missing and the presence of ochre was not reported (BECK – CIUGUDEAN – QUINN 2020, 93–95 with the old literature).

The few available <sup>14</sup>C dates for the final phase of the Coțofeni culture and for the Early Bronze Age Livezile and Copăceni groups from western Transylvania place the beginning of the tumular burials phenomenon in the Apuseni Mountains towards the end of the first half of the 3<sup>rd</sup> millennium BC. One notes a sample from the settlement in Livezile that provides an interval between 2880 and 2560 BC (GOGÂLTAN 2016a, 427 with the old literature). New dates (ROTEA *et al.* 2014, 31; CIUGUDEAN 2015, Fig. 2; GHEMIȘ *et al.* 2020, Tab. 1) confirm the development of these groups after 2700 BC (FRÎNCULEASA 2020b, Fig. 2; BECK – CIUGUDEAN – QUINN 2020, Fig. 2).

The cultural and chronological realities of the first half of the 3<sup>rd</sup> millennium BC in the central and southeastern parts of Transylvania are even more obscure. There are no absolute dates to help establish the moment of the appearance of ceramic styles typical of the Globular Amphora culture, Zimnicea-Mlăjet-Sânzieni-Turia, Jigodin or Schneckenberg A (GOGÂLTAN 2015, 67–69 with the old literature). Regarding funerary rites and rituals, graves with stone cists, grouped in small necropolises or isolated, seem to be one of its characteristics. The recently published distribution maps reveal the two contemporary “worlds”: in southwestern Transylvania the Șoimuș/Livezile/Copăceni Groups, with tumuli that mostly had stone mantles, and in the central and the southeastern parts of Transylvania the Schneckenberg graves with stone cists (GOGÂLTAN 2016a, 429 with the old literature). There is no certain proof of the Yamnaya presence in this region yet. As already mentioned, the passes over the Eastern Carpathians were never a barrier between Transylvania and the extra-Carpathian area, and therefore it is not impossible that in the future Yamnaya funerary discoveries will appear in the eastern extremity of the Carpathian Basin. As will be seen in the lines below, there are some artefacts found in this region for which an eastern origin can be presumed.

Along with the discoveries already presented, other monuments of North-Pontic origin are the stone anthropomorphic stelae (*Fig. 9.1; Pl. 3*). Eight such monuments are known from Transylvania: four in Baia de Criș (*Fig. 1.4*), one each in Ciceu-Mihăiești (*Fig. 1.12*) and Florești (*Fig. 1.19*) and one each, of the schematic type, in Gherla (*Fig. 1.20*) and Pianu de Jos (*Fig. 1.25*). Except for the stela from Florești (*Fig. 9.1*), found in secondary position within the circular stone structure of the supposed mound, the remaining seven items are stray finds without an archaeological context. For the majority of specialists, the introduction of stone stelae in the local environments took place from the east, along the movement of the North-Pontic communities. More recently, they have been connected to the arrival of the Yamnaya population in the Carpathian Basin (GOGÂLTAN 2016a, 429–434 with the old literature; DIACONESCU 2020, 20, *Fig. 1*).

Some cord-decorated beaker vessels from the current territory of Romania would also be part of the Yamnaya package (FRÎNCULEASA – PREDA – HEYD 2015, 67, *Fig. 13*; FRÎNCULEASA 2019, 143–144 *Fig. 1*; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 87, *Fig. 3*). However, there are numerous discoveries that attest to the use of this decoration starting with the end of the 5<sup>th</sup> millennium BC and during the



Fig. 9. Florești. 1. Anthropomorphic stelae; 2. Circular stone structure (after GOGÂLTAN 2016a with older literature)

subsequent millennium (REINGRUBER – RASSAMAKIN 2016, 303, Abb. 40; HEYD 2016, 66, Abb. 8). A similar situation can be noticed in Transylvania as well. In the context of the first contacts with the North-Pontic space can be mentioned a cord decorated vessel with crushed shells in the paste found in the Decea Mureșului type of settlement from Șeușa (GOGÂLTAN 2011, 111, Abb. 11; CIUTĂ – MARC 2012, 23, Fig. 12). The pot finds analogies in the Srednij Stog pottery, which was recently dated approximately between 4200–3900 BC (REINGRUBER – RASSAMAKIN 2016, 302, Abb. 17; 20; 39). The cord decorated ceramic fragments from the Ariușd settlement from Leț, in the south-east of the province, could be dated towards the middle of the 4<sup>th</sup> millennium BC (ROMAN – DODD-OPRIȚESCU – JÁNOS 1992, 44–45, Taf. 14/3–6; SZTÁNCSUJ 2015, 75–77). Such a dating can also be supported by the absolute dates from contemporary sites in Moldavia (MUNTEANU 2017). Following this sequence, pottery fragments with “pseudo twisted cord” decoration were found in the Coțofeni II settlement in Florești “Polus Center”. The settlement has been dated sometime during the last quarter of the 4<sup>th</sup> millennium BC (GOGÂLTAN 2016a, 434–435, Abb. 6). The use of cord decoration by the Coțofeni communities in the II-III phases was thoroughly discussed by Cristian I. Popa (POPA 2012, 138–145). Even if the percentage is very small, the 17 sites where this ornamentation technique has been documented indicate its appearance in the local environment before the arrival of the Yamnaya communities in Transylvania.

At the beginning of the Early Bronze Age, cord decoration became the main decorative element of the ceramics of the Jigodin group from eastern Transylvania. In the absence of absolute dates, the chronological position of this group was established in connection with the Glina-Schneckenberg horizon and placed between around 2700–2400 BC (GOGÂLTAN 2015, 68–69 with the old literature). Cord decorated vessels typical of the Yamnaya world, as they appear in southern Romania, Serbia, or

Hungary, are not known in Transylvania. An exception is the cord-decorated beaker discovered in the mound from Ereşteghin (Moacşa) in southeastern Transylvania (*Fig. 1.17*). The vessel was placed next to the head of a young individual, under 20 years old, west-east oriented and lying crouched on the right side in a stone slab cist (*Pl. 4.7*). The analogies with the vessels discovered in the Yamnaya mounds from Ploieşti-Triaş and Gurbăneşti determined Petre Roman to assign this discovery to a post Schneckenberg B period (ROMAN – DODD-OPRIŢESCU – JÁNOS 1992, 77–78, Taf. 57/3).

Let us now turn to objects from Transylvania to which specialists have attributed possible North-Pontic origins. The entire discussion of the distribution manner of wagons is well-known (BONDÁR 2018 with the old literature). The oldest wagon model known from Transylvania is an older discovery made in Bădăcin (*Fig. 1.5; Pl. 4.6*). It has been attributed to the Coţofeni Culture and its introduction in this environment has been interpreted as a result of contacts with the Baden world. Other pieces of evidence for the use of wagons during this chronological horizon are the few wagon wheel clay miniatures. Horse domestication has been repeatedly discussed in the connection to this means of transportation. Still, a restricted lot of archaeozoological analyses is available for Transylvania. It seems that the first appearance of *Equus caballus* dates back to the time of the Coţofeni communities, as indicated by the animal remains found in the settlements of Cicău and Şincai. These few discoveries are nevertheless insufficient to support a serious discussion on the time and manner in which wagons were adopted and on when horses were domesticated in the intra-Carpathian region (GOGÂLTAN 2016a, 535 with the old literature).

Metal items form another category of objects that may prove the existence of individual contacts between Transylvania and the North-Pontic world. Things are difficult to prove, under closer scrutiny. Metallurgic production was very low in the Coţofeni Culture. The few discovered daggers are types encountered in all contemporary cultural environments, even if good parallels exist in the North-Pontic world as well.

The introduction of massive copper shaft-hole axes (*Schalflochäxte*) marks the beginning of the Early Bronze both in the North-Pontic area and in the Carpathian Basin. Over time, some specialists have written that these axes had an eastern origin. It is true that the oldest items were found in the Caucasus, in the area of the Maykop Culture. The production of such axes in the Carpathian Basin ever since the second half of the 4<sup>th</sup> millennium BC, even if not excluded, must be proven with convincing discoveries. In the North-Pontic world, the practice of depositing shaft-hole axes in graves was rather popular, but in the Carpathian Basin axe moulds are only found in settlements, thus attesting local metallurgic activity. Svend Hansen also drew attention to the fact that shaft-hole axes are concentrated in the Carpathian Basin in hoards, while in the North-Pontic world they are mostly encountered in graves (HANSEN 2011, 141–144, 146–147).

The axes recently discovered in Transylvania (RIŞCUŢA 2016; GHEMIŞ 2020), do not inform us further regarding the cultural context in which they circulated. Two older discoveries coming from the Izbucu Topliţei Cave were dated by <sup>14</sup>C, however unfortunately not very precisely, between 2631–1948 cal BC (GHEMIŞ *et al.* 2020, 93–94, Tab. 1). Hopefully, new research that will be conducted this summer in the Izbucu Topliţei Cave will provide further information regarding the Roşia type of discoveries characteristic of the Early Bronze Age in Transylvania, and implicitly, the massive Dumbrăvioara type copper shaft-hole axes.

Another category of axes that circulated around the end of the 4<sup>th</sup> and the beginning of the 3<sup>rd</sup> millennium BC is that of flanged axes (*Randleistenbeil*), more precisely the Şincai variant according to Alexandru Vulpe (VULPE 1975, 40). They have been connected to both late Coţofeni communities and the Early Bronze Age groups in Transylvania (WITTENBERGER – ROTEA 2014, 21). The recently published axes are stray finds and provide very scarce information about the communities that created

and used them (CIUTĂ – TOTOIANU 2020). However, the few axes discovered in burial mounds in northern Muntenia can certainly be dated to a pre-Yamnaya chronological horizon (PREDĂ-BĂLĂNICĂ *et al.* 2019, 325). The flanged axes are probably local Transylvanian products and therefore cannot be associated with the Yamnaya world.

Let us turn to another case, one that has been recently discussed. A copper axe was found in grave 7 in Sárretudvari-Órhalom. According to János Dani, the closest analogy regarding its shape is an axe discovered in Transylvania, but the manner of decoration is slightly different. Unfortunately, no data is available on the place of discovery of the Transylvanian axe except “*Kreis Hunedoara*” (Pl. 4.5). The analogies mentioned from the North-Pontic area, such as the axes in Niznepavlovka, Klady or Cucușești Vechi II, remind us of shared typological elements (GOGÂLTAN 2016a, 436–437, Abb. 8).

We saw that no collective contacts between the North-Pontic world and the local population can be mentioned in the central and eastern parts of Transylvania along this horizon. But several metal items have been discussed part of individual connections. One is a dagger discovered in Crăciunel (Ocland) in a tumular grave with a crouched skeleton laid in a pit lined with rocks (Pl. 4.1) and another dagger from the stone cist grave in Sfântu Gheorghe (Fig. 1.29; Pl. 4.2). The item from Crăciunel belongs to the category of *Griffangeldolche* and was included in the “Yamnaya type”. Nevertheless, the moulds from Sarvaș from the Vučedol environment point to local production. The daggers from Romania, discovered in the distribution areas of the Coțofeni Culture (Băile Herculane), Yamnaya Culture (Mihai Viteazu), Glină Culture (Odaia Turcului), and in the tumulus from Crăciunel, have thus been dated to the end of the 4<sup>th</sup> millennium and in the first half of the 3<sup>rd</sup> millennium BC (GOGÂLTAN 2016a, 437, Abb. 9/2–3).

One must also mention the spiral gold hair ring from Brașov (Pl. 4.4). Good analogies come from grave 7 of mound 15 from Glinoe, on the left bank of the lower Dniester river (RAZUMOV – LYSENKO 2020, 25–26, Fig. 2/2), in grave 5 from mound 5 in Giurgiulești close to the Prut river (CIOBANU *et al.* 2019, 40, Fig. 1/3), and in “Toncheva” mound close to the Venets village in southeastern Bulgaria (GEORGIEVA – NIKOV – HRISTOVA 2018, Cat. nr. 39), all assigned to the Yamnaya world. Hair rings, but with two loops, were found in the mounds close to Popovo and Troyanovo localities, in southeastern Bulgaria (VALCHEV – BLAZHESKA 2014, 238, Fig. 2/5; ALEXANDROV – KAISER 2016, 362, Fig. 7) or in north-west Bulgaria in mound 3 (grave 1) in Tarnava (ALEXANDROV 2020b, 252, Fig. 8). Compared to gold items (ALEXANDROV 2019, 88), silver hair rings are much more widespread (FRÎNCULEASA *et al.* 2017b, 104–105; ALEXANDROV 2020b, 252–253, Figs 3–5, 9–10). It was estimated that they occur as grave goods in approximately 5% of the Yamnaya graves researched on the Romanian territory (PREDĂ 2015, 22). As for the hair ring from Brașov, given it is a stray find, we considered that it circulated in the local Schneckenberg environment, characteristic of the Early Bronze Age in southeastern Transylvania (GOGÂLTAN 2016a, 437–438, Fig. 9/1).

A category of grave goods represented in pre-Yamnaya burials in northern Muntenia are copper spectacle-shaped pendants (*Brillenspirale*) (FRÎNCULEASA – PREDĂ – HEYD 2015, 73, Pl. 18/1–2; FRÎNCULEASA *et al.* 2016, 121; FRÎNCULEASA *et al.* 2017c, 167). Similar items realised in the *Furchenstich* technique are represented on several Coțofeni III vessels from Transylvania such as the ones from Sebeș, Răchita, etc. (POPA 2011; 2012, 145–147, Pl. 61/7) and more recently Deva (BARBU – BARBU – MARC 2016, 363, Fig. 4). Subsequently they can be found in the Early Bronze Age mounds of southwestern Transylvania (Poiana Aiudului, Livezile, Mada) or in the spectacular grave from Șoimești, south of the Carpathians, but slightly smaller in size (PREDĂ 2015, 15–18; FRÎNCULEASA *et al.* 2020, 213, Fig. 8/A), which is dated prior to the middle of the 3<sup>rd</sup> millennium BC. The conclusion reached by Alin Frînculeasa is that such pendants are the product of the intra-Carpathian or Central European region from where they circulated over the Carpathians (FRÎNCULEASA 2020b, 54).



Also in the context of supra-regional networks, another category of artefacts that attracted the attention of researchers are the stone battle axes (PREDĂ-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 89, Fig. 6). However, they can also be attributed to the local cultural environment, which in the case of the isolated axe from Făgăraş from southeastern Transylvania (Fig. 1.18; Pl. 4.3) can only be Schneckenberg (IRIMIA 1978).

\*

Some conclusions are required. The existence of Yamnaya funerary monuments in western Romania (Banat and Crişana) is a reality. The lowland area, part of the Great Hungarian Plain, along with eastern Hungary and the Serbian Banat can be included in the distribution area of the Yamnaya communities (FRÎNCULEASA 2020b, Fig. 1; DIACONESCU 2020, Fig. 1). They seem to have cohabited with the local populations of the Late Baden-Kostolac and Early Makó-Kosihy-Čaka. The intensity of the presence of Yamnaya communities in the intra-Carpathian area cannot be ascertained. It seems a fact that this population arrived in southwestern Transylvania sometime during the first half of the 3<sup>rd</sup> millennium BC, but one cannot find the necessary arguments to show that it was directly responsible for the profound transformations that took place in Transylvania at the beginning of the Early Bronze.

As we have seen, the funerary rite and ritual from a series of burials in mound necropolis in southwestern Transylvania is not typical of the Yamnaya world but of the local Coţofeni and, later on, Early Bronze Age communities. Recent bio-anthropological analyses of some skeletons from mound 1 from Meteş–*La Meteşel* and those from the settlement from Alba Iulia–*Pârâul Iovului*, did not indicate major differences between the individuals buried in the high area of the Apuseni Mountains and those in the lower valley of the Mureş river. They belong to the same local cultural environment (BECK – CIUGUDEAN – QUINN 2020, 97–105). Such analyses would also be required for individuals considered to belong to the Yamnaya communities, in order to be able to compare them with the local population. Therefore, we cannot assess the intensity of collective contacts between Transylvania and the North-Pontic region. Anthropomorphic stone stelae, along with a series of objects that prove a certain social status and are also found in the Yamnaya world, can also be representations of the social status of elites in a trans-regional dialogue.

### Acknowledgements

I am grateful to Volker Heyd for the invitation to participate in the Yamnaya Interactions Workshop held in Helsinki in 2019 and to contribute to the Proceedings. I would also like to thank Alin Frînculeasa and Bianca Predă-Bălănică for bibliography and discussions and to Gruia Fazecaş for making the map from Figure 1.

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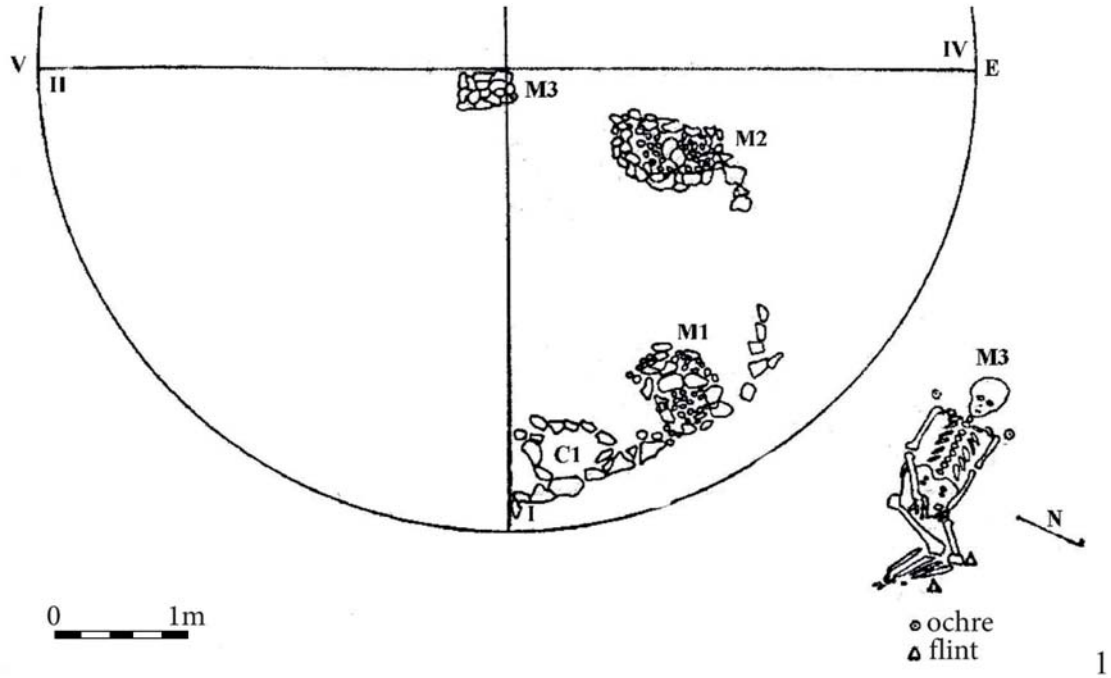
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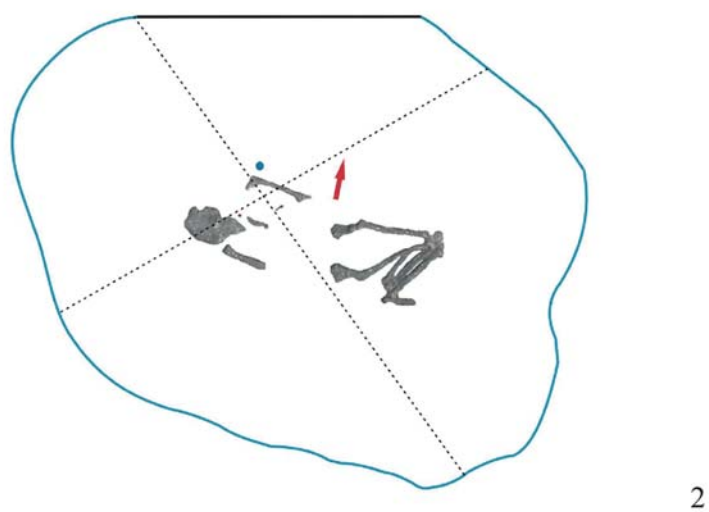
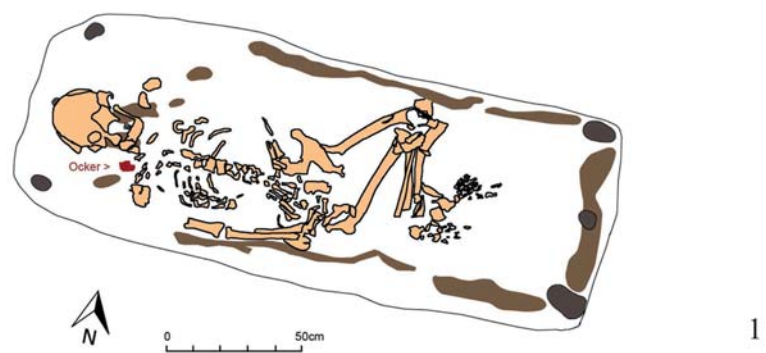
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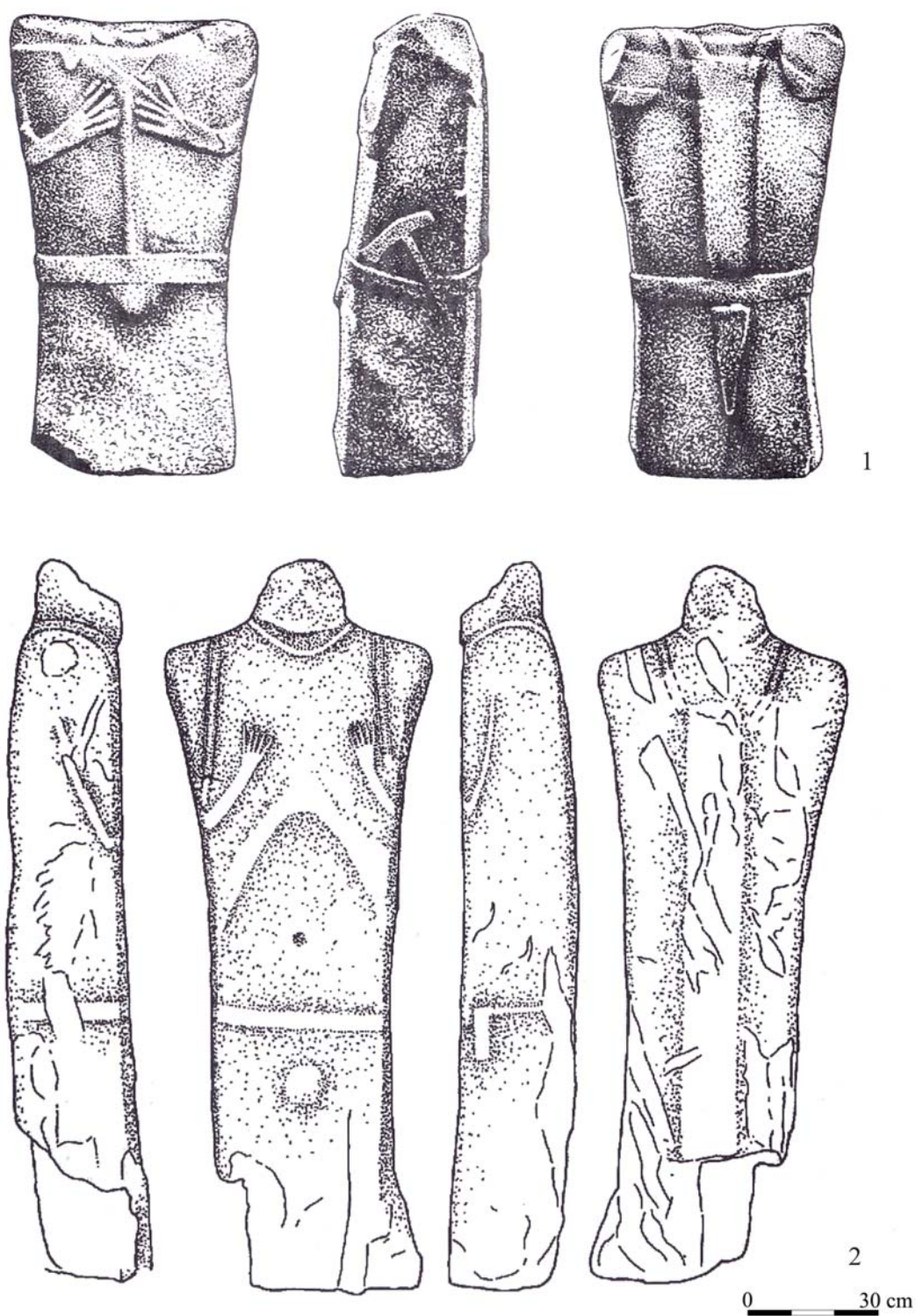
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Pl. 1. Tureni. 1. Grave 3; 2. The mound in 2020 (photo A. Demjén)

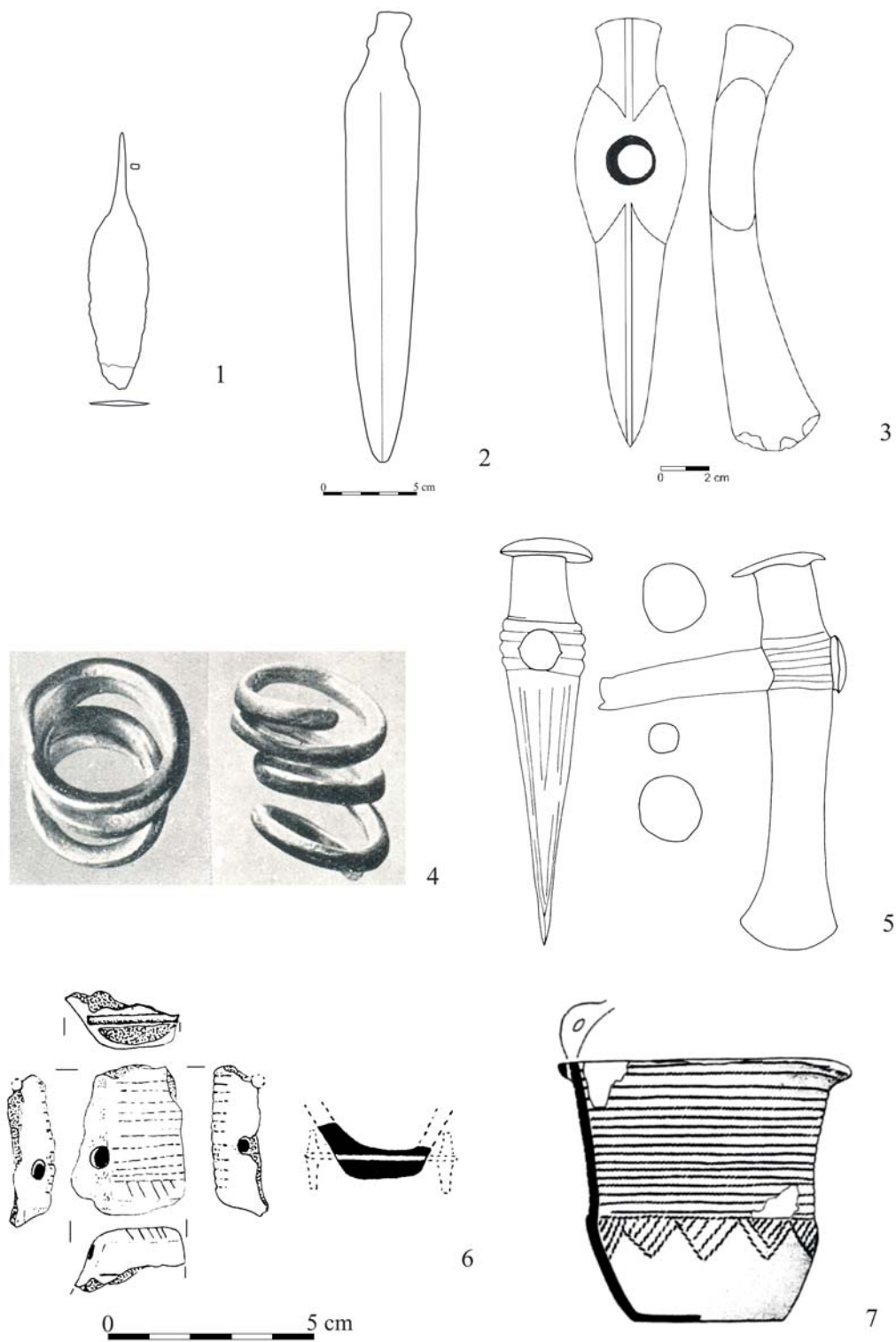


Pl. 2. 1. Bucova Pusta near Dudeştii Vechi (after KRAUSS et al. 2016);  
2. Silivaşu de Jos (after DIACONESCU 2020); 3. Agriş (photo V. Stan)





Pl. 3. 1. Baia de Criș. Discovery 2000; 2. Ciceu-Mihăiești (after GOGÂLTAN 2016a with older literature)



Pl. 4. 1. Crăciunel (Ocland); 2. Sfântu Gheorghe (after GOGÂLTAN 2016a with older literature); 3. Făgăraș (after IRIMIA 1978); 4. Brașov; 5. “Kreis Hunedoara”; 6. Bădăcin (after GOGÂLTAN 2016a with older literature); 7. Eresteghin (Moacșa) (after ROMAN – DODD-OPRIȚESCU – JÁNOS 1992)

## Fourth/third millennium BC barrow graves in North-East Bulgaria (120 years of investigations)

STEFAN ALEXANDROV

### Abstract

*The article discusses the present state of research of the Early Bronze Age mortuary practices in North-East Bulgaria, focusing on barrow graves. More than 120 graves from the region are discussed with an attempt to include them into several typological groups: supine inhumations with flexed legs; semi-supine inhumations; relaxed and contracted hocker inhumations, extended inhumations. The groups are chronologically assigned, according to the radiocarbon dates available, to different periods of the Early Bronze Age in the region as follows: supine inhumations with flexed legs to 3300–2600 cal BC period; relaxed hocker inhumations to 3300–2900 cal BC period; contracted hocker inhumations, semi-supine inhumations and extended inhumations to 2900–2500 cal BC period. The group of the very much contracted hocker inhumations is argued to actually date to the Middle Bronze Age.*

*Special attention is paid to the groups of the relaxed and slightly contracted hocker inhumations with parallels to the West/Northwest of the region investigated, but, most of all – to the north, in North Dobrudja and, Zhivotilovka – Bursuceni and Vânători – Bolotești groups north of the Danube river. The appearance of the supine inhumations with flexed legs with their additional characteristics – predominantly male graves; head in the western sector; red ochre spread over the body, especially the head, wrists and feet; rectangular pits covered with wooden planks; organic cover over the pit floor as well as stone anthropomorphic stelae, is related to Yamnaya Culture. Its appearance in North-East Bulgarian lands is argued to be around 3300 cal BC.*

**Key words:** *Bronze Age Barrows, Mortuary Practices, Lower Danube, Yamnaya Culture, Zhivotilovka – Bursuceni and Vânători – Bolotești groups*

Barrow graves in North Bulgaria have always been of great interest to the archaeologists investigating the problems of cultural development, trade and migrations of the Bronze Age populations in Southeastern Europe. After the appearance of Ivan Panayotov's very important monographic study dedicated to Yamnaya Culture in Bulgaria (PANAYOTOV 1989), several attempts have been made to classify and determine the chronology and cultural attribution of the BA barrow graves in the region discussed (for example NIKOLOVA 2000, 434–441; BURTĂNESCU 2002, 266–276, 386–388; MOTZOI-CHICIDEANU 2011, 250–257). However, all these were largely based on old data, without introducing any new information or, generally discussing the North-East Bulgarian complexes into a larger scale of the BA barrow graves in Lower Danube region and Thrace (ALEXANDROV 2011; KAISER – WINGER 2015; ALEXANDROV – KAISER 2016). On the other hand, since 1990 more than 20 BA barrows have been investigated in North-East Bulgaria increasing the total number of the graves there to more than 140, most of them remaining unknown for the numerous archaeological audience. The large scale introduction of radiocarbon dating as well as anthropological and other interdisciplinary analyses allow, nowadays, a more detailed and complex look at the questions the EBA barrow graves in the region set. Considering the large discussion on the Yamnaya migration to the west (for example HEYD 2011; KLEJN 2017; KAISER 2019) and the key role the regions discussed had





*Fig. 1. The region investigated*

played in it, a new approach on the graves in discussion is even more needed. Thus, the main goals of the present article will be: a critical historiographic review of all the relevant investigations in the region; establishing the relative and absolute chronology of the grave groups and, setting the picture into the larger scale of the EBA development in the Lower Danube and the adjacent regions.

The study of Bronze Age<sup>1</sup> barrows in North-East Bulgaria started in 1899 when, during the investigations in and around Pliska, the capital of the first Bulgarian Kingdom, conducted by the Russian archaeological institute in Constantinople, two barrows located at “Vezir tepe” elevation south-east of the medieval town were excavated. The expedition used the so-called “step trench” method, excavating only a reverse pyramidal segment of the central part of the barrows. While there were no features found in the first barrow, barrow No. 28<sup>2</sup> (approximately 2 m height) revealed, at a 2.4 m depth, dug into the virgin soil, a supine inhumation with flexed legs, head to southwest, arms alongside the body (*Fig. 11.1–3*). The grave had been covered with an elongated limestone “slab” with dimensions of 2.5×1.1 m (ŠKORPIL 1905, 332–333). Thirty years later, Rafail Popov, using the same method, excavated two more barrows near Tsarev brod (former Endze), in the same region. The excavations brought to light seven Early Bronze Age (EBA) and one Iron Age (7<sup>th</sup> century BC) graves (POPOV 1932). In 1933–1934 Vasil Mikov investigated nine more barrows south of Pliska, part of necropolises located near Kalugeritsa, Madara and Kiulevcha, adding 30 more investigated BA graves to the list (MIKOV 1934; 1936). Since

<sup>1</sup> The 4<sup>th</sup>–3<sup>rd</sup> millennium BC enter, according to Bulgarian chronology and periodization of the Prehistory, the Early Bronze Age period with the following stages: EBA-1 (3500–2900 BC); EBA-2 (2900–2500/2400 BC) and EBA-3 (2500/2400–2200/2100 BC) (ALEXANDROV 2018).

<sup>2</sup> The numerals of the barrows around Pliska are given according to Karel and Herman Škorpil description (ŠKORPIL – ŠKORPIL 1898).

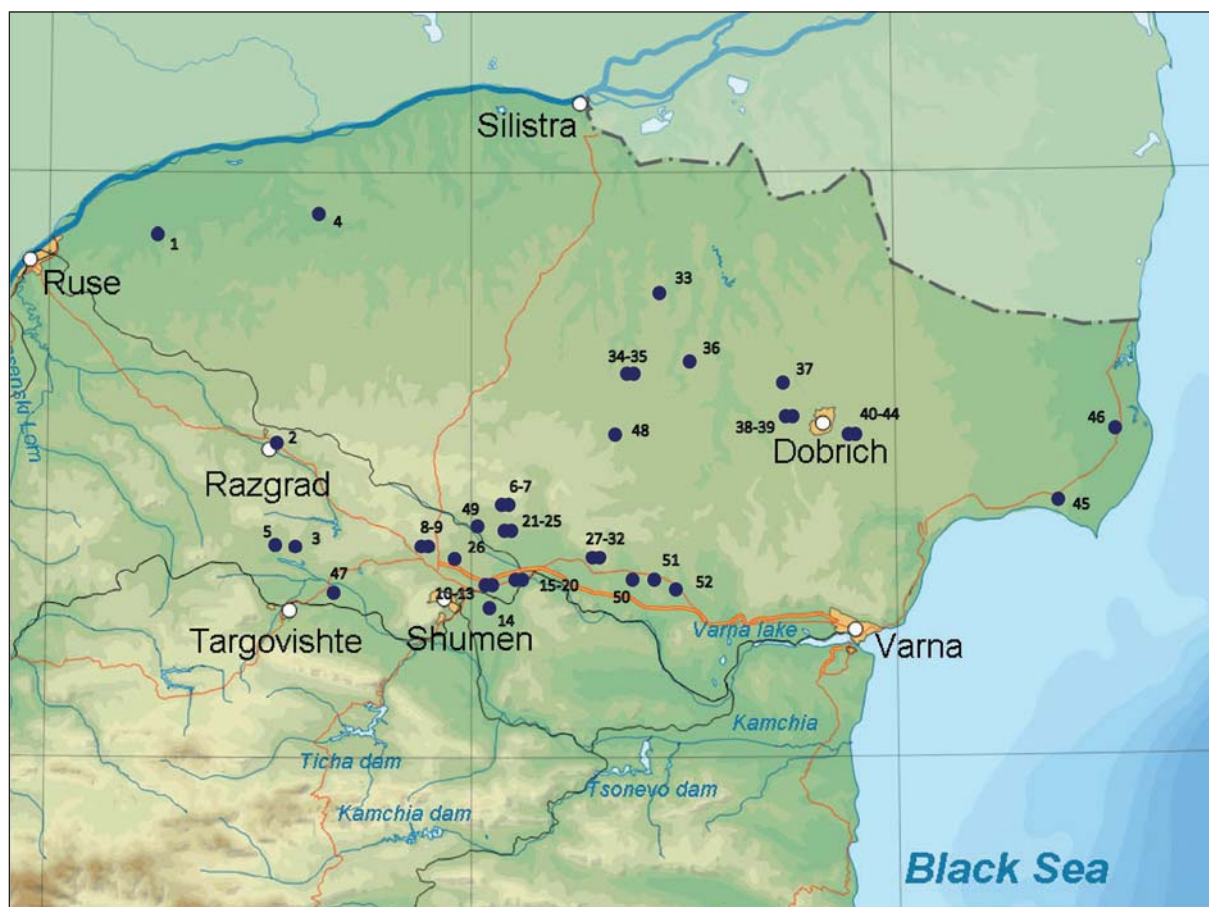


Fig. 2. Investigated Bronze Age barrows in North-East Bulgaria. 1. Stambolovo, 2. Razgrad, 3. Ralitsa, 4. Belitsa, 5. Chudomir, 6–7. Izbul, 8–9. Tsarevbrod, 10–13. Madara, 14. Kiulevcha, 15–20. Kalugeritsa, 21–25. Pliska-West, 26. Pliska-Kabiyuk, 27–32. Belogradets, 33. Kamentsi, 34–35. Zeglartsi, 36. Geschanovo, 37. Smolnitsa, 38–39. Riltsi, 40–44. Plachi dol-1, 45. Kavarna, 46. Shabla, 47. Vasil Levski, 48. Pet mogili, 49. Zlatna niva, 50. Vetrino-1, 51. Vetrino-2, 52. Vetrino-3, 53. Pliska-Vezir tepe

then, 41 excavated Bronze Age barrows in North-East Bulgaria have been added to that lot, nowadays their number reaching 53 (Fig. 2), with 143 securely dated Bronze Age graves (Tables 1–7).

However, the map of the excavated barrows shows a certain inequality in the level of investigation of different North-East Bulgarian regions. For example, while in the small region around Provadiyska river (Shumen-Provadiya plateau with a surface of approximately 500 km<sup>2</sup>) 34 barrows with 97 BA graves have been investigated, from the regions geographically known as Dobrudja and Ludogorie (a territory of approximately 10,000 km<sup>2</sup>), only 16 barrows with 46 graves are known so far (Figs 1–2).

## Geographic Distribution of the Early Bronze Age Barrow Graves

### I. Shumen – Provadiya – Varna lakes region

The region covers the water catchment of Provadiyska river that enters the Varna lakes. As mentioned earlier, this is the region with the biggest number of Bronze Age barrows investigated so far, as follows:



## 1. Pliska – Madara region

### 1.1. The necropolises (Fig. 3.1)

Three Bronze Age (BA) necropolises are located around Pliska. Two of them are set on the ridges of the hills east and west of the Mediaeval capital. The *Pliska-West* necropolis comprises 8 barrows placed in a 2.5 km North-South line above *Syuyutlyudere* riverbank (Fig. 4a). The *Pliska-East* necropolis (part of which is the *Vezir tepe* barrow) comprises at least 7 barrows set in a line that runs in a Northeast-Southwest direction on the ridge of the hill between Kamenitsa and Kriva rivers (Fig. 11.3). The number of the BA barrows in *Izbul* necropolis, located north of Pliska, is uncertain due to the fact that during the Roman Age more than 30 barrows have been piled there. In the beginning of the 20<sup>th</sup> century the number of the barrows in that area was 43 (KITOV 2000, 311). The two barrows west of *Tsarev brod* excavated

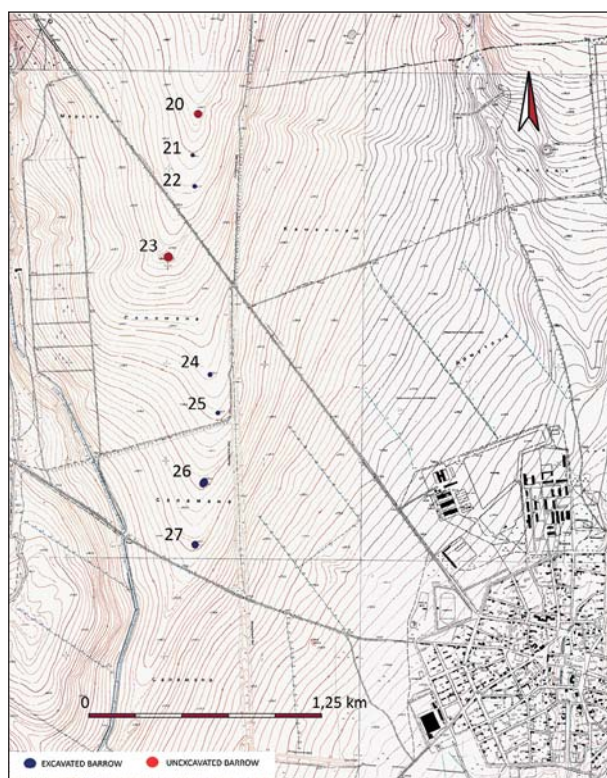


Fig. 3. Barrow necropolises and single barrows mentioned in the text. 1. Shumen-Madara region, 2. Vetrino region, 3. Dobrich-east region, 4. Dobrich-west region, 5. Karapelit region, 6. Shabla region, 7. Durankulak region, 8. Ziten necropolis, 9. Sredishte-Kolartsi necropolis, 10. Geshanovo necropolis, 11. Belitsa necropolis, 12. Stambolovo necropolis, 13. Vasil Levski barrow, 14. Ralitsa barrow, 15. Chudomir barrow, 16. Varna lakes region, 17. Pet mogil barrow

by R. Popov were probably part of a necropolis composed of at least 7 barrows located in a line of Northwest-Southeast direction on the ridge of the hill south and east of the village. The *Madara* and *Kalugeritsa* barrows were, probably, part of one and the same necropolis composed of at least 13 barrows that run in Southwest-Northeast direction on the ridge of the hill north of both villages (*Fig. 4b*). Almost half of the barrows discussed had a height of 0.60–0.80 m but, considering the fact that after the introduction of modern agriculture their surface has been ploughed with heavy machines for decades, their actual height should have been circa 1 m. At least two of the barrows from every necropolis had a height of more than 3 m, the rest – between 1.5–2.5 m.

### 1.2. The investigations (*Tables 1–2*)

The investigations of Bronze Age barrows in the region resumed more than half a century after the excavations of R. Popov and V. Mikov in 1920s – 1930s mentioned before. In 1989, during rescue excavations, a small barrow near Zlatna niva village was investigated, revealing one grave with few bones and skull fragments painted with red ochre in it (ATANASSOV – BABADZANOV 2008). In 1990, Georgi Kitov and Georgi Atanassov, during the excavations of the Roman age necropolis near Izbul, excavated two barrows dated to the EBA. The barrows, with Nos. 23 and 24, revealed 5 and 6 EBA graves, respectively (KITOV 2000). Six more barrows from Pliska-West necropolis were explored by Stanislav Stanilov and Rasho Rashev near the western wall of Pliska fortification in 1997–1998.<sup>3</sup> A total number of 6 EBA graves were investigated, one in each barrow. The latest barrow investigated here so far is barrow No. 5 in the “Early Medieval Tumuli Complex near Kabiyuk” partly excavated by Rasho Rashev in 2006, with two EBA graves found (MITKOVA 2014, 199–204). Finally, it should be mentioned that only the central part of the barrows from Madara, Tsarev brod, Pliska, Kabiyuk and Zlatna niva have been explored<sup>4</sup> thus, the only completely excavated barrows in the region so far being the two barrows near Izbul and, probably – the Kiulevcha one.



*Fig. 4a. The Pliska-West necropolis.  
Location of the barrows on a 1970 map*

<sup>3</sup> The results are not published. The author would like to express his gratitude to Prof. S. Stanilov for kindly giving permission to use the results of the excavations.

<sup>4</sup> The fact has already been discussed by I. Panayotov for Tsarev brod, Kalugeritsa and Madara barrows (PANAYOTOV 1989, 62).



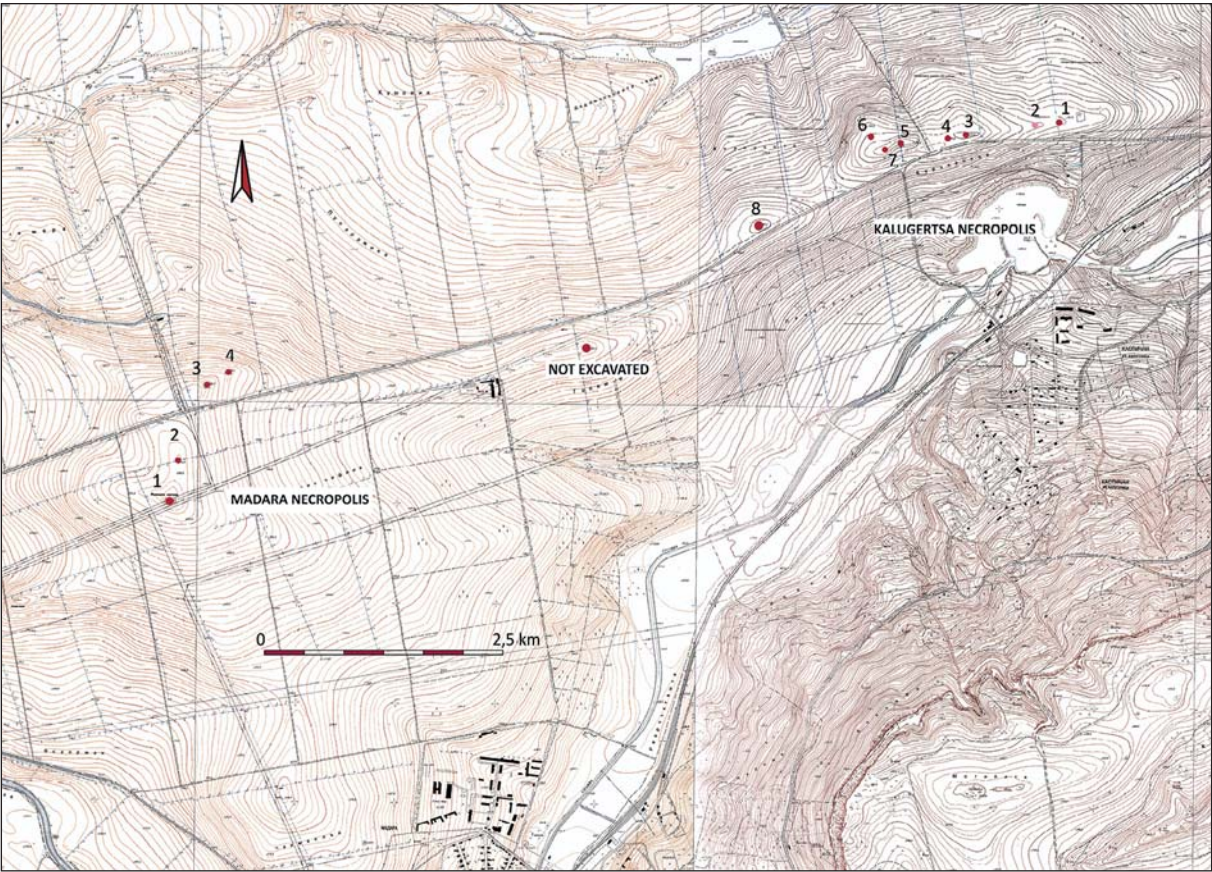


Fig. 4b. The Madara and Kalugertsia necropolises. Location of the barrows on a 1970 map

Table. 1. Barrow necropolises around Pliska.  
Barrow graves investigated in 1899, 1929, 1989, 1997–1998, and 2005

Barrow/Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
Pliska Vezir-tepe	35 m; 2.00 m	Primary?	Supine with flexed legs	Early Bronze Age	No?	No
Pliska-21 21/1	Ploughed, leveled	Primary?	Hocker to the right	Early Bronze Age	YES	No
Pliska-22 22/1	35 m; 0.70 m	Primary?	Supine with flexed legs	Early Bronze Age	YES	No
Pliska-24 24/1	37 m; 0.70 m		Destroyed	Early Bronze Age	YES	No
Pliska-25 25/1	30 m; 0.70 m	Primary?	Semi-supine to the right	Early Bronze Age	YES	No
Pliska-26 26/1	36 m; 0.75 m	Primary?	Hocker to the right	Early Bronze Age	YES	YES
Pliska-27 27/1	30 m; 0.65 m	Primary?	Hocker to the right	Early Bronze Age	YES	No

Barrow/Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
<b>Izbul-23</b> 23/1 23/2 23/3 23/4 23/5 23/6	40 m; 2.3 m	Secondary Secondary Secondary Secondary Primary? Primary	Semi-supine to the right Badly preserved Extended Badly preserved Semi-supine to the right Semi-supine to the right	Early Bronze Age Early Bronze Age Early Iron Age Early Bronze Age Early Bronze Age Early Bronze Age	YES No No YES No YES	No No YES No No No
<b>Izbul-24</b> 24/1 24/2 24/3 24/4 24/5 24/6 24/7	35 m; 2.0 m	Secondary Secondary Secondary Primary Secondary Secondary Secondary	Semi-supine to the left Destroyed Hocker Few bones Hocker Extended Semi-supine to the right	Early Bronze Age Early Bronze Age Early Bronze Age Early Bronze Age Early Bronze Age ? Early Bronze Age	No No YES No No No YES	No No No No No No No
<b>Zlatna niva</b> 1/1	25 m; 0.80 m	Primary	Few bones	Early Bronze Age	YES	No
<b>Tsarevbrod-1</b> 1/1 1/2 1/3 1/4 1/5	32 m; 4.50 m	Secondary Primary? Secondary Secondary Secondary	Partly destroyed Supine with flexed legs Supine with flexed legs Hockers/Adultus+Infans Hockers/Adultus+Infans	Early Bronze Age Early Bronze Age Early Bronze Age Early Bronze Age Early Bronze Age	YES YES YES YES YES	No No No No No
<b>Tsarevbrod-2</b> 2/1 2/2 2/3	34 m; 8 m	Secondary Secondary Primary	Extended Semi-supine to the right Supine with flexed legs	7th century BC Early Bronze Age Early Bronze Age	 YES YES	 No No
<b>Kabiuk</b> 1/1 1/2	20 m; 0.70 m	Secondary Primary?	Destroyed Semi-supine to the left	Early Bronze Age Early Bronze Age	YES Yes	No No

Table. 2. Barrow necropolises in the Madara region. Barrow graves investigated by V. Mikov in 1933–1934

Barrow/Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
<b>Madara-1</b> 1/1 1/2 1/3 1/4	24 m; 3.6 m	Secondary Secondary Secondary Primary?	Hocker to the left Extended Hocker to the right Destroyed	Middle Bronze Age Christian? Early Bronze Age Early Bronze Age	No No YES No	YES No YES No
<b>Madara-2</b> 2/1 2/2	18 m; 1.0 m	Secondary Secondary	Supine with flexed legs Hocker to the left	Early Bronze Age Early Bronze Age	No YES	No No
<b>Madara-3</b> 3/1 3/2 3/3 3/4 3/5 3/6	20 m; 2 m	Secondary Secondary Secondary Secondary Secondary Primary	Extended Extended Hocker to the left Hocker to the left Extended Supine with flexed legs?	? ? Early Bronze Age Early Bronze Age 7th – 8th cent. AD Early Bronze Age	No No No No No YES	No No YES YES YES No



Barrow/Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
<b>Madara-4</b>	22 m; 1.5 m					
4/1		Secondary	Destroyed	Early Bronze Age	No	YES
4/2		Secondary	Destroyed	Early Bronze Age	No	No
4/3		Secondary	Extended	?	No	No
4/4		Primary?	Hocker to the right	Early Bronze Age	No	No
<b>Kalugeritsa-1</b>	Destroyed					
<b>Kalugeritsa-2</b>	Destroyed					
<b>Kalugeritsa-3</b>	24 m; 1.5 m					
3/1		Secondary	Semi-supine to the right?	Early Bronze Age	No	No
3/2		Secondary	Semi-supine to the right?	Early Bronze Age	YES	No
3/3		Secondary	Extended	Early Bronze Age	No	No
3/4		Primary	Hocker to the right with ring of stones	Early Bronze Age	YES	YES
<b>Kalugeritsa-4</b>	23 m; 0.80 m					
4/1		Secondary	Supine with flexed legs	Early Bronze Age	No	No
4/2		Primary?	Supine with flexed legs	Early Bronze Age	No	No
<b>Kalugeritsa-5</b>	30 m; 2.50 m					
5/1		Secondary	Cremation in urn	Iron Age?	YES	No
5/2		Secondary	Supine with flexed legs?	Early Bronze Age	YES	No
5/3		Secondary	Supine with flexed legs?	Early Bronze Age		No
5/4		Secondary	Cremation in urn	Iron Age?	YES	No
5/5		Secondary	Supine with flexed legs?	Early Bronze Age	No	No
5/6		Secondary	Hocker to the left	Early Bronze Age	YES	YES
5/7		Secondary	Supine with flexed legs	Early Bronze Age	YES	No
5/8		Primary	Supine with flexed legs	Early Bronze Age		No
<b>Kalugeritsa-6</b>	20 m; 0.40 m	Destroyed inhumation grave/s				
<b>Kalugeritsa-7</b>	20 m; 0.60 m					
7/1		Secondary	Hocker to the left	Early Bronze Age?	No	No
7/2		Secondary	Hocker to the left	Early Bronze Age?	No	No
7/3		?	Extended	Christian?	No	No
<b>Kalugeritsa-8</b>	22 m; 0.50 m	Destroyed inhumation grave/s				
<b>Kiulevcha-1</b>	28 m; 3.50 m					
1/1		Secondary	Hocker to the right	Early Bronze Age	YES	No
1/2		Secondary	Supine with flexed legs	Early Bronze Age	YES	No
1/3		Secondary?	Hocker with ring of stones	Early Bronze Age	YES	No
1/4		Secondary	Hocker covered with stones	Early Bronze Age	No	No
1/5		Primary	Supine with flexed legs	Early Bronze Age	YES	No

### 1.3. The graves

From all twenty six barrows investigated in the region so far; in 22 of them BA graves have been found.<sup>5</sup> For the above mentioned reasons, the relations between the size of the barrow – number of graves in it or, secondary graves – additional fills could not be established.

We have reliable data for the primary graves in 18 barrows only.<sup>6</sup> Eight of them were inhumations in supine position with flexed legs; three – in semi-supine position and, five – in relaxed hocker<sup>7</sup> position. In

<sup>5</sup> Four of the barrows investigated near Kalugeritsa (Nos. 1, 2, 6 and 8) did not reveal “sealed” features but scattered bones in the upper part of their fills only. The fact suggests that they had been destroyed by looters prior to the excavations, so they will be excluded from further analyses here.

<sup>6</sup> The primary graves from Madara, barrow 1 and Pliska, barrow 24 had been destroyed, the primary graves from Madara, barrow 2 and Kalugeritsa, barrow 7 have not been found.

<sup>7</sup> “Hocker” is a term from German archaeological language that describes a particular position of the body in the grave – placed lateral in fetal position: legs flexed at the knees, arms in front of the torso/head. The term

two primary graves only scattered bones were found. The grave structures in all cases were rectangular pits covered with wooden planks. In all graves red ochre over the bones was found, especially over the skull. Cover of the pit floor is mentioned only for the graves with supine position with flexed legs – in 6 out of 8 cases. Inventory was found only in two of the hocker graves: a clay vessel (Pliska 26/1) and a silver ring (Kalugeritsa 5/6).

From all 37 secondary BA barrow graves from the region there is information about 30 of them.<sup>8</sup> Grave-pits were distinguished in quite a few cases at Izbul – rectangular or oval in shape; with information regarding covering with wooden planks for Izbul 23, graves 1, 4 and 5. Cover of the pit-floor was registered for Izbul 23, grave 1 only. Eight graves from that lot presented single inhumations in supine position with flexed legs; seven – single inhumations in semi-supine position, twelve – single inhumations in hocker position and, one – inhumation in extended position<sup>9</sup>. Two graves were double (with an adult individual and an infant each).

Six of the secondary supine inhumations, four of the semi-supine, five of the hockers and the two double graves had red ochre over the bones. The individuals in hocker position without ochre were (in the graves in which it is possible to distinguish from the descriptions) in a very strongly contracted position, usually dug in the upper part of the barrow fill at a depth less than 1 m from the current surface. Judging from their inventory (clay cups in Madara 3/3 and 3/4 and Kalugeritsa 5/6), it is quite possible that they could be dated to the Middle Bronze Age. The extended inhumations had no red ochre.

## 2. Vetrino region (Fig. 3.2)

### 2.1. The necropolises

At least 8 barrow necropolises with Early Bronze Age characteristics are known from here. The barrows were arranged in lines on the ridges of the small hills that define the landscape of the region (with a total surface of approximately 300 km<sup>2</sup>). In most of the cases the lines follow a North-South direction. The distance between the barrows varies from 20 to 200 m or more. Usually one or two of the barrows from the necropolis are “big”, with heights from 3 to 5 m (in some cases reaching 8 m) and diameters of up to 70 m; the height of the rest is between 0.50–2.5 m. The number of the barrows in the necropolises varies from 6 (Vetrino 3) to more than 30 (Vetrino 1), the distance between necropolises – from 2 to 5 km in straight line (Fig. 5).

### 2.2. The investigations (Tables 3–4)

The only investigated necropolis in this micro-region is *Belogradets*, excavated by Goranka Tončeva in 1972–1974. It was composed of at least 15 barrows<sup>10</sup> from which 13 were excavated. Although the data

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has a long use in South-East European archaeology so, it will be use here as well. An additional classification according to the angle formed by the spinal column and the legs of the deceased will be used here as well: “contracted hockers” – with an angle smaller than 90 degrees and, “relaxed hockers” – with an angle wider than 90 degrees (ALEXANDROV 2011).

<sup>8</sup> Seven secondary graves have been destroyed either by later grave-pits or by modern anthropogenic activities.

<sup>9</sup> Nine graves with extended inhumations are known from the region so far. Only Kalugeritsa 3/3 grave can be securely dated to the Early Bronze Age thanks to its stratigraphic position – between hocker inhumation with ring of stones and semi-supine inhumation with red ochre over the bones. According to their inventory, 3 graves (Izbul 23/3, Tsarevbrod 2/2 and Madara 3/5) could be dated to the Early Iron Age. Two graves (Kalugeritsa 7/3 and Madara 1/2), according to their position and orientation could be Christian. The rest of 3 graves were found in upper part of their respective fills with no inventory so, currently, their date is uncertain (ALEXANDROV 2010).

<sup>10</sup> The location of the necropolis in the publications is set as “south of Belogradets village”. Nowadays, in the field where presumably the necropolis was located at least two more unexcavated barrows are clearly visible.

are controversial,<sup>11</sup> 5 of all 13 barrows (No. 1 – 0.5 m height, No. 2 – 1 m height, No. 4 – 1.70 m height, Nos. 6 and 10)<sup>12</sup> had at least one Early Bronze Age grave in their fills. Barrow No. 3 (1.40 m height) revealed 4 Early Bronze Age graves from which No. 2 was a triple grave; in grave No. 4 scattered human bones and two skulls were found (from *Iuvenis* and *Infans* individuals).<sup>13</sup> Barrows with Nos. 5, 8, 11–13 each revealed one grave with extended inhumation, the graves being surrounded by rings of stones/cromlech; all of them dated by the investigator to the Early Iron Age. However, in the lack of grave inventory and radiocarbon dating, the chronological attribution of those five graves was only based on the similarity in their skeleton position with the one from barrow No. 4, grave No. 1 (secondary, with additional fill), with inventory that securely dates it to 7<sup>th</sup> century BC. There are no data about the features discovered in barrows Nos. 7 and 9 but they are dated by the author to the EBA (TONČEVA 1978; 1980).

Table. 3. Barrow necropolis near Belogradets. Graves investigated by G. Tončeva in 1972–1974

Barrow/ Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
1/1	25 m; 0.5 m	Secondary	Extended, destroyed	?	No data	No
1/2		Primary	Supine with flexed legs	Early Bronze Age	Yes	No
2/1	40 m; 1.0 m	Primary	Supine with flexed legs	Early Bronze Age	No data	No
3/0	40 m; 1.4 m	Secondary	Destroyed	7 <sup>th</sup> century BC		
3/1		Secondary	Hocker to the right	Early Bronze Age	YES	No
3/2		Primary	Triple grave/Hockers	Early Bronze Age	YES	YES
3/3		Secondary	Hocker	Early Bronze Age	YES	YES
3/4		Secondary	Scattered bones. 2 skulls	Early Bronze Age	YES	No
4/1	40 m; 8.5 m; EBA barrow 1.5-1.7 m	Secondary	Extended	7 <sup>th</sup> century BC		
4/2		Primary	Semi-supine to the right	Early Bronze Age	YES	No
5	No data	Primary	Extended with stone ring	Early Iron Age?	No data	No
6	22 m; ? m	Primary	Supine with flexed legs	Early Bronze Age	Yes	No
7	No data					
8	No data	Primary	Extended with stone ring	Early Iron Age?	No data	No
9	No data; only 24 m2 excavated, no features discovered?					
10	No data	Primary	Supine with flexed legs	Early Bronze Age	No data	No
11	No data	Primary	Extended with stone ring	Early Iron Age?	No data	No
12	~10 m; 0.20 m	Primary	No data, inhumation	Early Iron Age?	No data	No
13	~10 m; 0.20 m	Primary	Extended with stone ring	Early Iron Age?	No data	No

In the region discussed, three more barrows were investigated during rescue excavations in 2020. The first one (0.50 m height) was part of *Vetrino-1* necropolis (34<sup>th</sup> in line), composed of more than 30 barrows that run in North-South direction west of the village (Fig. 5). It revealed 3 Early Bronze Age graves. The primary grave was surrounded by a ring of stones/cromlech (ALEXANDROV – SLAVCHEV 2020). The second excavated barrow (1 m height) was part of the *Vetrino-2* necropolis (7<sup>th</sup> in line), composed of 10 barrows set in a line south of the village (Fig. 5). Four EBA graves were found in

<sup>11</sup> According to the data acquired from the excavations’ journal kept in NAIM-BAS archive, not all the barrows have been completely excavated, especially those with Nos. 5 to 13, where only the central part had been explored with a 5×5 m trench.

<sup>12</sup> According to G. Tončeva the EBA barrow No. 4 had a height of 1.50–1.70 m; later – in 7<sup>th</sup> century BC a secondary grave was placed in its’ centre, with additional fills raising the height of the barrow to 8.5 m. The dimensions of barrows Nos. 5–13 are not mentioned.

<sup>13</sup> Anthropological data for Belogradets in JORDANOV – MICHAJLOVA 1984; the data for the grave inventory comes from the excavations’ journal.

the barrow (BOZKOVA – TONKOVA 2020). The third barrow (1.20 m height) was part of the *Vetrino-3* necropolis (1<sup>st</sup> in line), composed of 6 barrows that stand in an East-West line southeast of the village (Fig. 5). Nine BA graves were investigated there, from which 7 date to the Early Bronze Age.<sup>14</sup>

Table. 4. Barrow necropolises near Vetrino. Barrow graves investigated in 2020

Barrow/ Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
Vetrino-1 necropolis, barrow 34						
34/1	35 m; 0.50 m	Secondary	Destroyed, inhumation	Middle Bronze Age	No	No
34/2	Ring of stones/ cromlech around grave 2	Primary	Disarticulated body	Early Bronze Age	YES	No
34/3		Secondary	Hocker to the right	Early Bronze Age	YES	YES
34/4		Secondary	Hocker to the right	Early Bronze Age	YES	No
Vetrino-2 necropolis, barrow 7						
7/1	50 m; 1.0 m	Primary	Hocker to the right	Early Bronze Age		No
7/2		Secondary	Few bones preserved	Early Bronze Age		YES
7/3		Secondary	Destroyed, inhumation	Early Bronze Age		No
7/4		Secondary	Destroyed, inhumation	Early Bronze Age		No
Vetrino-3 necropolis, barrow 1						
1/1	40 m; 1.20 m  Ring of stones around grave 1	Secondary	Hocker to the right	Early Bronze Age	YES	No
1/2		Secondary	Few bones preserved	Late Bronze Age?	No	No
1/3		Secondary	Semi-supine to the right	Early Bronze Age	YES	YES
1/4		Primary	Hocker to the right	Early Bronze Age	YES	YES
1/5		Secondary	Hocker to the right	Early Bronze Age	YES	No
1/6		Secondary	Hocker to the left	Middle Bronze Age	YES	No
1/7		Secondary	Semi-supine to the right	Early Bronze Age	YES	No
1/8		Secondary	Few bones preserved	Early Bronze Age	YES	Yes
1/9		Secondary	Disarticulated body	Early Bronze Age?	YES	No

### 2.3. The graves

There is a general relation between the size of the barrow and the number of the EBA graves found in it (reaching up to 7), which is clearly visible in the completely investigated barrow fills from Vetrino necropolises. Only one barrow (Vetrino-3/1) had additional fill piled over the secondary graves.

We have secure data for the primary graves in 9 barrows. All of the grave-pits were rectangular in shape and, where it was possible to distinguish – with steps. Covering with wooden planks was registered in four graves, two grave-pits had been covered with wooden barks, two others – with wooden barks and stones above them.<sup>15</sup> All pit floors had been covered with an organic sheet. The massive use of stones in the EBA mortuary practices here is to be noted: in three barrows the primary graves were encircled with rings of stones; four primary or secondary grave-pits had been covered with a very big amount of middle- and big-sized stones as well.

Four of the primary graves were inhumations in supine position with flexed legs (all *adult males*); one – in semi-supine position (*adult male*); two – in hocker position (*adult males*), one – with scattered bones (*infant*); one grave was a triple inhumation (*adult male and 2 infants*). In all graves red ochre was found, spread over the bones, especially the skull. Pieces of red ochre near the skull were registered in several cases as well. Animal bones were found in *Belogradets*, graves Nos. 2/1 and 3/2.

<sup>14</sup> Excavations led by the author and Vladimir Slavchev (Varna Museum).

<sup>15</sup> There are no data about the grave-pit in *Belogradets* 10/1.





*Fig. 5. Barrows in the Vetrino region*

Sixteen secondary BA barrow graves are known from the region so far. Two of them date to MBA, one – to the LBA and, thirteen – to the EBA. The distinguished EBA grave-pits were rectangular in form, in most of the cases – with steps, covered with wooden planks or stone slabs. Organic cover of the pit floor was registered in most of the cases as well. It is worth mentioning that the pits of the latest graves in the respective barrows were not covered. The deceased in seven secondary graves were in

hocker position; in two – in semi-supine position; in other two graves infants in uncertain positions were buried; one grave revealed scattered bones and two skulls; the positions of the deceased in two graves wasn't specified. All graves presented red ochre spread over the bones. Grave inventory was found in *Belogradets 3/3* – clay cup and two pendants made of animal teeth (*canis?*); *Vetrino-1 34/3 (adult male)*<sup>16</sup> – two silver hair rings, bone bead and a segment from a copper wire; *Vetrino-2 7/2 (infant)* – clay vessel; *Vetrino-3 1/4 (maturus, male)* – awl made of bone and *1/8 (infant)* – clay cup.

## 2.4. Anthropomorphic stelae

In 1976, a stone anthropomorphic stela from the region of Nevsha village (*Fig. 19.1*), located several kilometers south of Belogradets necropolis came to light. Unfortunately, no more information is available (TONČEVA 1981a, 131, *Fig. 2/c, d*).

## 3. Targovishte region (*Figs 3, 13–15*)

Three Bronze Age barrows are known from the region (*Table 5*).<sup>17</sup> The first barrow was investigated by Stefan Ivanov in 2008–2009. It was located approximately 5 km east of Targovishte, near Vasil Levski village (*Fig. 2.47*). The primary grave had been destroyed by looters; the remaining human bones had been coloured with red ochre. Two secondary graves with additional fills were found as well – extended inhumation of an *infant* (3–5 years old) in a rectangular pit with no signs of red ochre or covering of the grave-pit (grave No. 1), and relaxed hocker – an *adult individual* (grave No. 2) buried in a rectangular pit with red ochre over the bones and pit floor (IVANOV 2017).

Two more barrows were investigated north of Targovishte during rescue excavations in 2020. The barrow near Chudomir (2.30 m height) revealed thirteen BA graves and three BA features. The primary grave was an inhumation (*maturus, female?*)<sup>18</sup> in a relaxed hocker position, to the right. Next, chronologically, come two graves with supine inhumations (*adult male* and double grave of *adult male and infant*, the last one with 3 vessels placed in the pit). The two graves had additional barrow fill and were encircled by a ring of stones with a diameter of 32 m. The third chronological period is related to seven single graves dug into the barrow fill. Three of them had deep grave-pits with steps entering the virgin soil. The deceased (*infant, adult male* and *male* over 60 years old) were buried in semi-supine position to the right. No inventory was found in those graves. The other four graves had simple pits dug at a depth of circa 1 m into the fill. The deceased (*male, iuvenis – no.1; infans I – no.2; Adultus male? – no.13; female? Maturus – no.18*) were buried in the same position. Inventory (beads of animal bones; clay jug, golden hair ring and beads, bronze razor) was found in two of the graves – nos. 18 and 13. The last two Bronze Age periods in the barrow are related to one Middle Bronze Age and one Late Bronze Age grave. Most of the EBA grave-pits had been covered with wooden barks; traces of organic cover were found on the pit floors. Red ochre was registered in all EBA graves as well (ALEXANDROV 2020b).

During the same rescue excavations project, the eastern half of a barrow north of Ralitsa village was investigated (*Fig. 2.3*).<sup>19</sup> Two meters south-east of the central point of the barrow a relaxed hocker inhumation (*adult male*, no inventory) was investigated. Red ochre was registered over the torso and spinal column of the individual.

<sup>16</sup> The anthropological study for graves from Vetrino was made by Dr. Nadezda Atanassova.

<sup>17</sup> In 1979 a barrow near Razgrad was investigated (*Fig. 2.2*). One of the graves discovered presented BA characteristics but, because of the lack of more information, it will not be included in the present analysis.

<sup>18</sup> The anthropological study for Chudomir and Ralitsa graves was made by Dr. Nadezda Atanassova.

<sup>19</sup> The author would like to express his gratitude to Plamen Karailiev (the director of the excavations) for kindly giving permission to use the results of the investigations.

Table. 5. Barrows in the Targovishte region. Barrow graves investigated in 2008–2009 and 2020

Barrow/Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
<b>Vasil Levski 1</b> 1/0 1/1 1/2	40 m; 4.0 m	Primary Secondary Secondary	Destroyed Extended Supine with flexed legs	Early Bronze Age ? Early Bronze Age	YES No YES	No No No
<b>Chudomir 1</b> 1/1 1/2 1/3 1/4 1/5 1/6 1/7 1/8 1/9 1/10 1/11 1/12 1/13 1/14 1/15 1/16 1/17 1/18 1/19 1/20	50 m; 2.30 m Nos. 5 and 10 – with ring of stones	Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Primary Secondary Secondary Secondary	Scattered bones Semi-supine to the right Semi-supine to the right Destroyed Supine with flexed legs Extended “Cult” feature Semi-supine to the left Semi-supine to the right Supine with flexed legs Extended “Cult” feature Semi-supine to the right? Semi-supine to the right Vessel Extended Hocker to the right Semi-supine to the right Semi-supine to the right Scattered bones	Late Iron Age Early Bronze Age Early Bronze Age 17 <sup>th</sup> -18 <sup>th</sup> cent. AD Early Bronze Age 17 <sup>th</sup> -18 <sup>th</sup> cent. AD Early Bronze Age Middle Bronze Age Early Bronze Age Early Bronze Age 17 <sup>th</sup> -18 <sup>th</sup> cent. AD Early Bronze Age Early Bronze Age Early Bronze Age 17 <sup>th</sup> -18 <sup>th</sup> cent. AD Early Bronze Age Early Bronze Age Early Bronze Age Late Bronze Age	No YES YES No YES YES - YES YES YES No - YES YES - No - YES YES YES No	No No No No YES No - YES No No No - YES No - No YES YES No No
<b>Ralitsa 1</b> 1/1	40 m; 1.0 m?	Primary?	Hocker to the right	Early Bronze Age	YES	No

4.Varna lakes region (Fig. 3.16)

The Varna lakes region is well known with its Bronze Age submerged prehistoric settlements (TONČEVA 1981b; ROMAN – DODD-OPRIȚESCU – JÁNOS 1992). North and south of the settlements several barrow necropolises are located, nowadays only the bigger barrows being preserved.

4.1. Anthropomorphic stelae

From the region north of the Ezerovo settlement at least three stone anthropomorphic stelae were found (Fig. 19.3). According to G. Tončeva, beneath the stelae human bones and pottery fragments were found (TONČEVA 1967).

II. South Dobrudja and Ludogorie region

South Dobrudja is an arid area with average altitude between 250–350 m above the sea level. Ludogorie region has, generally, the same characteristics with a higher altitude and (as the name presumes)<sup>20</sup> a big part of the region is and had been covered in the past with forests. We have at our disposal secure data from 16 barrows investigated from that region, with a total number of 46 graves as well as information

<sup>20</sup> Ludogorie (*Deliorman* in Turkish) means “Crazy forest”.



for an EBA grave in one more barrow. The geographic distribution shows several micro-regions with big concentration of EBA barrow necropolises as follows:

### 1. The region east of Dobrich (Fig. 3.3)

#### 1.1. Necropolises

The BA barrow necropolises are set on the highest parts of plateaus or small hills, arranged in lines. Ivan Panayotov wrote that Plachi dol-1 necropolis consisted of 6 barrows (located south of the village) from which 5 barrows were investigated (PANAYOTOV 1989, 95). It is quite possible that the necropolis extended in northern direction where at least 5 more barrows were located; three of them being destroyed in the second half of the 20<sup>th</sup> century (Fig. 7). South of Plachi dol-1 necropolis another one is located, composed of more than 15 barrows located east of Stefanovo village. East of Plachi dol-1, another line of at least 5 barrows is located. That line is probably connected to Plachi dol-2 necropolis north of the village. It consists of more than 30 barrows set in a curved North-South line with a large concentration of barrows in its middle part (PANAYOTOV 1989, 120).<sup>21</sup> Three km east of Plachi dol-2 another line of at least 6 barrows is to be seen; further north (north-east of Pobeda village) another necropolis of more than 20 barrows is situated. The last one repeats the Plachi dol-2 pattern with an agglomeration of barrows in the middle of the line. The last necropolis is situated east of Polkovnik Sveshtarovo village, composed of approximately 20 barrows set in a North-South line (Fig. 6).

Another big agglomeration of barrows with Bronze Age characteristics is located in the extreme North-East part of the country, in Durankulak – Shabla region. Six barrow necropolises are set around Durankulak. They are composed of 5–6 to more than 20 barrows that run in a curved North/Northwest–South/Southeast lines. Some of them are even bigger, extending in the present day Romanian Dobrudja (Fig. 8). Three more necropolises are arranged in lines south of this group near villages Vakilino (Fig. 10.5), Ezerets and Shabla town.

A common feature of the necropolises discussed here is the presence of at least two or three “big” barrows (with height of up to 7 m) in every necropolis (Fig. 9.1–2, 5). Between the two discussed agglomerations several small necropolises of 5–6 barrows are located as well.

#### 1.2. The investigations

Seven barrows have been investigated in the region east of Dobrich so far (Table 6). The only, partly, investigated necropolis is Plachi dol-1. In 1979–1980 Ivan Panayotov and Valentin Dergacev excavated five of the barrows there. The two bigger barrows (with Nos. 1 and 2) revealed five and ten EBA features respectively,<sup>22</sup> the rest of 3 barrows had one EBA grave each (PANAYOTOV 1989, 24–28, 94–119). One of the barrows from Shabla necropolis has been investigated during rescue excavations in 1987. It revealed four Bronze Age graves and two stone constructions (GEORGIEVA 1991). In 1958–1959 Ivan Rafailov from Kavarna museum excavated several barrows from a necropolis north of the town. There is data about at least one investigated hocker inhumation with red ochre over the bones discovered in “Barrow B” (PANAYOTOV 1989, 133).

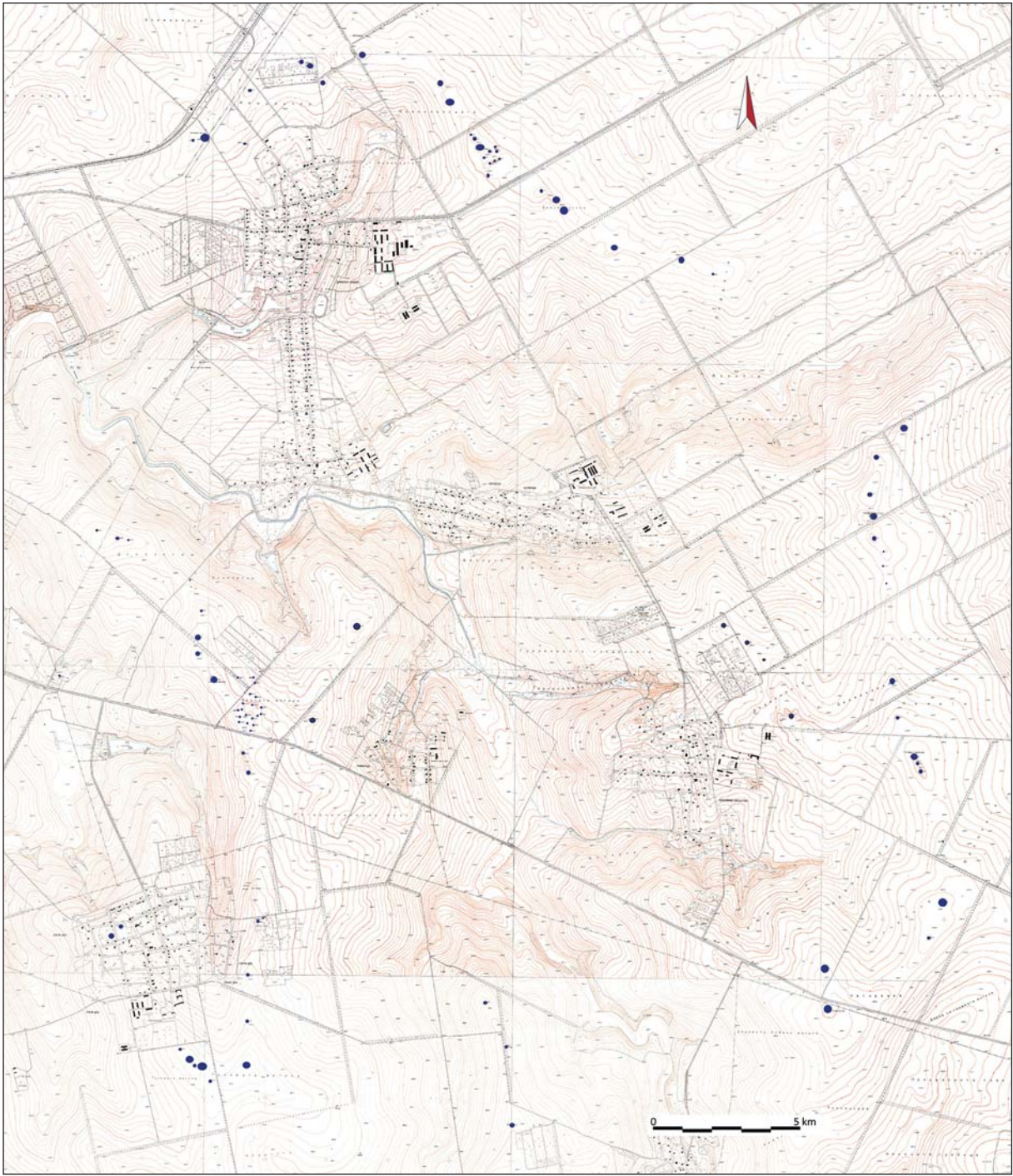
#### 1.3. The graves

There is a direct relation between the size of the barrow and the number of graves in it in the region. The biggest barrow excavated, Plachi dol-1, barrow No. 2 (3.20 m height) revealed nine graves and one

<sup>21</sup> The bigger part of the necropolis, formally, is located in the region of Primortsi village.

<sup>22</sup> During the excavations of barrow No. 1 (with 7.20 m height) in 1980 an earthquake event caused falling down of the barrow fills so, only a part of the central sector of the barrow remained investigated.





*Fig. 6. Barrows east of Dobrich. Location of the barrows on a 1970 map*

“cult” feature; Shabla barrow (3.10 m height) had four EBA graves; in the excavated part of Plachi dol-1, barrow 1, only five secondary EBA graves were found. Most of the secondary graves had additional fill. The smaller barrows from Plachi dol-1 necropolis had one grave only.



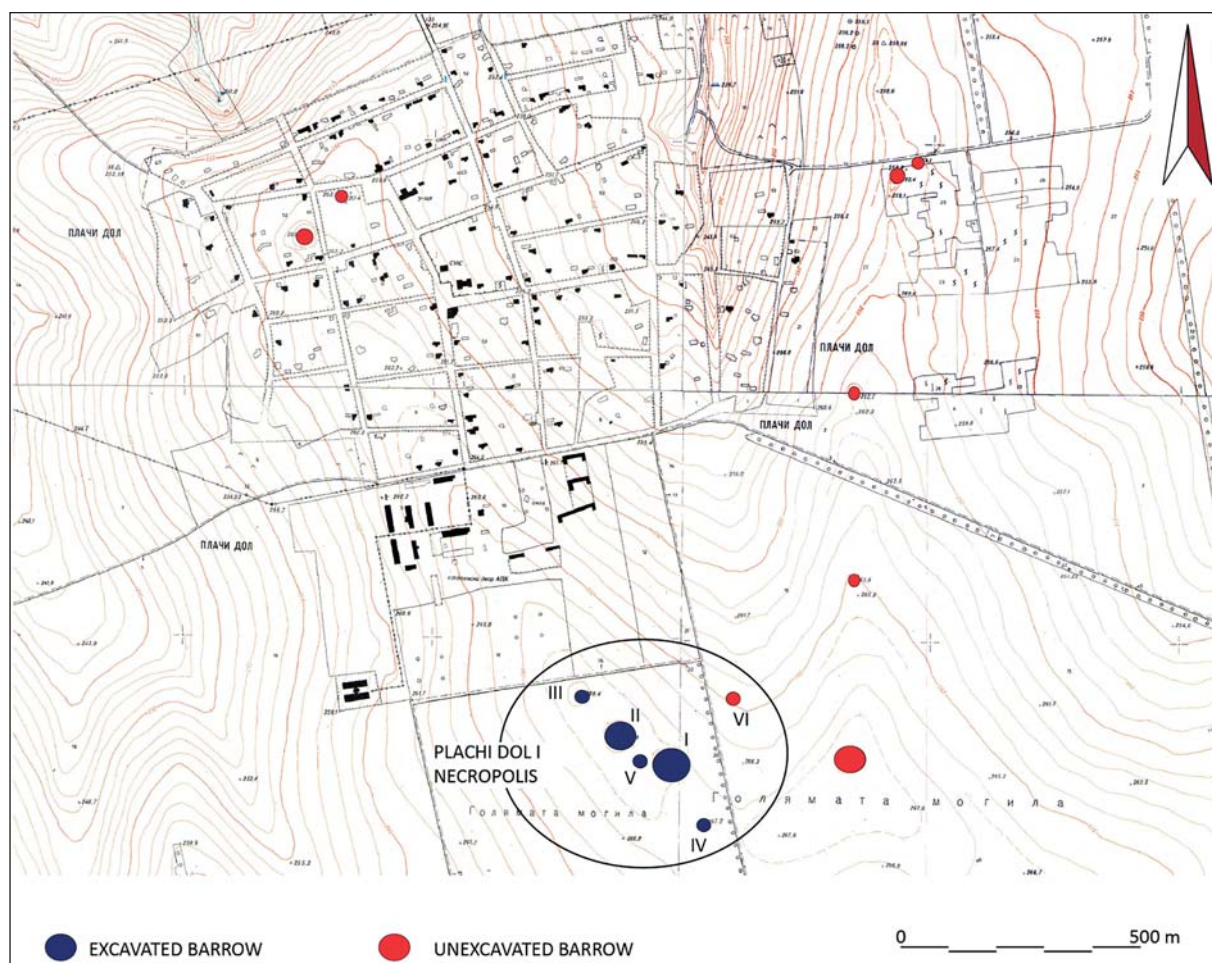


Fig. 7. The Plachi dol-1 necropolis and barrows south of Plachi dol village.  
Location of the barrows on a 1970 map

All primary graves were single, all buried individuals were adult males.<sup>23</sup> Three of the primary graves presented inhumations in supine position with flexed legs, one - in semi-supine position; The primary structure for Plachi dol-1, barrow 2 had no human bones in it. All primary grave-pits were rectangular in form, with organic cover of the floor. All grave-pits, with the exception of the semi-supine grave Plachi dol-1 5/1, were covered with wooden planks. All skeletons had red ochre over the bones. No inventory was found in those graves.

Sixteen secondary EBA graves are known from the region so far. All graves were single – *four adult males*; *four adult females* and *four children* (1–6 years old). Four graves were not investigated anthropologically. Five of the secondary graves presented inhumations in supine position with flexed legs; one – in semi-supine position; seven – in hocker position;<sup>24</sup> two graves were badly preserved. Supine and semi-supine inhumations were made in rectangular pits with steps, covered with wooden planks; organic covering of the floor is registered as well. There is no data for the pits of the hocker inhumations. Ochre was found in all supine and semi-supine inhumations and only in one hocker inhumation. Grave

<sup>23</sup> There is anthropological data for Plachi dol-1 graves only (JORDANOV – MICHAJLOVA 1984).

<sup>24</sup> It is quite possible some of the very much contracted hocker inhumations without red ochre to actually date to Middle Bronze Age.

inventory was found in 3 graves from Plachi dol-1, barrow 2 only: 6 *talus* bones in grave 2/3; traces of metal hair rings in graves 2/6 and 2/7 and a vessel in grave 2/7.

Table. 6. Barrow necropolises east of Dobrich. Barrow graves investigated in 1959, 1979–1980 and 1987

Barrow/Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
PLACHI DOL I necropolis						
Plachi Dol-1/1	55 m; 7.30 m					
1/1	Only part of the central sector excavated	Secondary	Semi-supine to the right	Early Bronze Age	YES	No
1/2		Secondary	Few teeth, animal bones	Early Bronze Age	No	No
1/3		Secondary	Hocker to the left	Middle Bronze Age	No	No
1/4		Secondary	Hocker to the left	Middle Bronze Age	No	No
1/5		Secondary	Supine with flexed legs	Early Bronze Age	YES	No
Plachi Dol-1/2	42 m; 3.20 m					
2/1		Secondary	Supine with flexed legs	Early Bronze Age	YES	No
2/2		Secondary	“Cult feature”	Early Bronze Age		No
2/3		Secondary	Hocker to the right	Middle Bronze Age	YES	YES
2/4		Secondary	Hocker to the right	Middle Bronze Age	No	No
2/5		Secondary	Supine with flexed legs	Early Bronze Age	YES	No
2/6		Secondary	Supine with flexed legs	Early Bronze Age	YES	YES
2/7		Secondary	Badly preserved	Early Bronze Age	No	YES
2/8		Primary	No skeleton	Early Bronze Age		No
2/9		Secondary	Supine with flexed legs	Early Bronze Age	No	No
2/10		Secondary	Hocker to the left	Early Bronze Age	No	No
Plachi Dol-1/3	40 m; 1.20 m					
3/1		Primary	Supine with flexed legs	Early Bronze Age	YES	No
Plachi Dol-1/4	29 m; 1.50 m					
4/1		Primary	Supine with flexed legs	Early Bronze Age	YES	No
Plachi Dol-1/5	24 m; 1.0 m					
5/1		Primary	Semi-Supine to the right	Early Bronze Age	YES	No
SHABLA necropolis						
Shabla-1	40 m; 3.10 m					
1/1		Secondary	Hocker to the right	Early Bronze Age?	No	No
1/2		Secondary	Hocker to the right	Early Bronze Age	YES	No
1/3		Primary	Supine with flexed legs	Early Bronze Age	YES	No
1/4		Secondary	Destroyed	Early Bronze Age	YES	No
KAVARNA necropolis						
Kavarna-1	?					
1/1		?	Hocker to the right	Early Bronze Age	YES	No

Plachi dol-1, graves 1/1 and 1/2 are of particular interest. Grave 1/1 was a secondary grave (pit with steps) found at a depth of 4.90 m from the central point. It revealed an inhumation of a 20-30 year-old *female* in semi-supine position. The grave-pit had been covered with a wooden car/wagon (PANAYOTOV 1989, 95–98). The car/wagon (Fig. 16.1–2, 4–5) remains the only such discovery from the EBA in the Lower Danube region so far. Grave 1/2 was discovered 4 m west of grave 1/1 at a depth of 5.60 m. The grave-pit was covered with 5 wooden planks. In the pit-fill teeth of a 20-25 year-old individual, red ochre and animal bones were found (PANAYOTOV 1989, 98–99). The analyses of the animal bones revealed bones from *Bos Taurus* and *Equus caballus*. From the last species *proximal phalange*, *acetabulum* and *costae* were found (Fig. 16.3).<sup>25</sup> This is the first “closed complex” with horse remains in North-Bulgarian Early Bronze Age so far.

<sup>25</sup> The analyses were made by Dr. Nadezda Karastoyanova from the National Museum of Natural History - BAS.





Fig. 8. Barrows in the Durankulak region. Location of the barrows on a 1970 map

#### 1.4. Anthropomorphic stelae

In 1965, three kilometers north of Plachi dol (judging from the publication, probably in the periphery of the so-called „Zhelezova barrow“ – 5 m height, part of the Plachi dol-2 necropolis), during ploughing, two stone anthropomorphic stelae were found (*Fig. 19.4*) (BOBCHEVA 1967; PANAYOTOV 1989, 120).<sup>26</sup> During the excavations of Plachi dol-1 necropolis, three more stone stelae came to light. Two stelae were found in the fills of barrow No. 1,<sup>27</sup> one – in barrow No. 2 (PANAYOTOV 1989, 95, 105, *Оф.* 63, 79).

<sup>26</sup> According to the workers that found the stelae, there were human bones beneath them.

<sup>27</sup> During the earthquake mentioned above, students saw at least two more stelae in the falling down barrow.



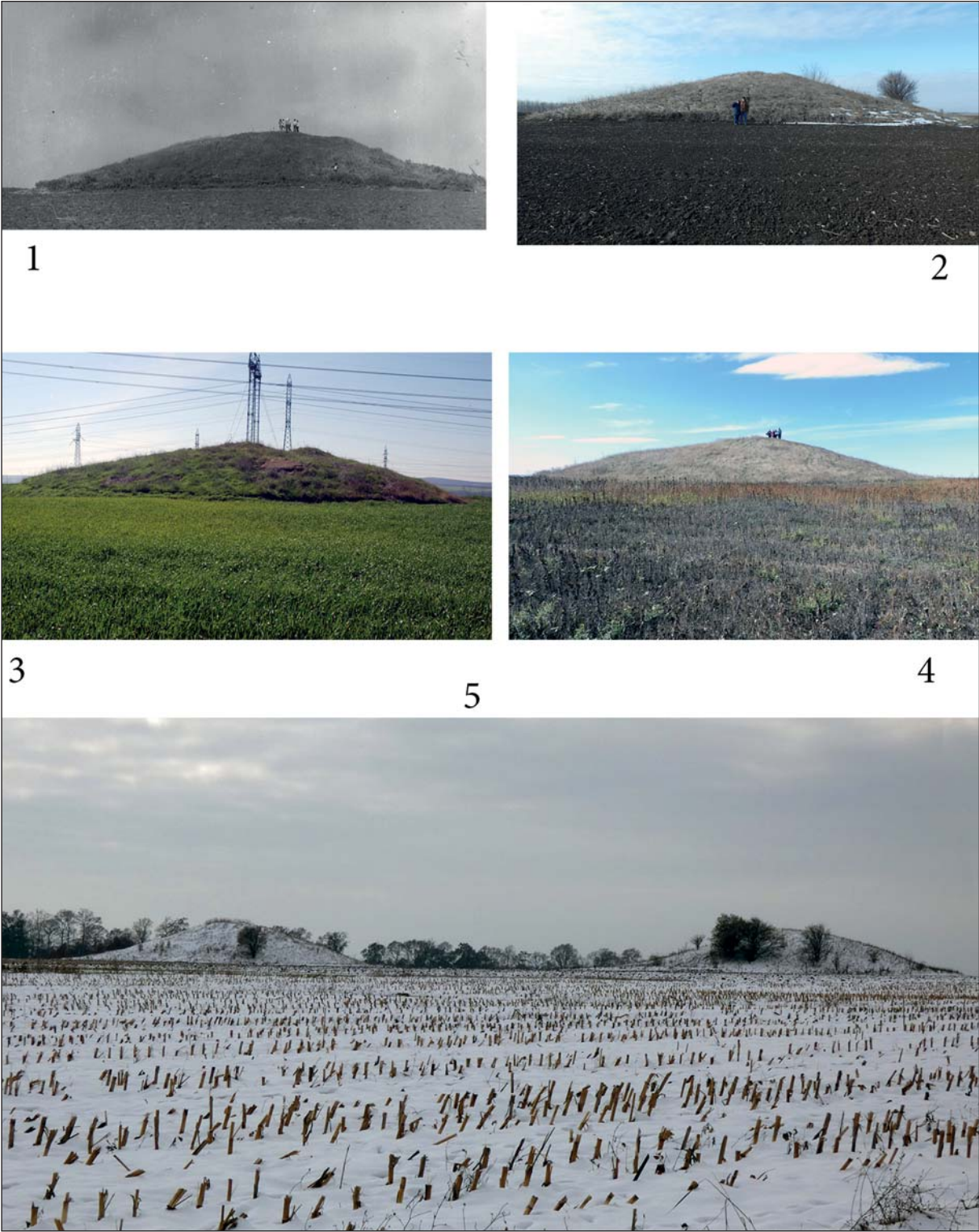


Fig. 9. North-East Bulgaria. Barrows with a height between 5–7 m. 1. Plachi dol-1, barrow 1 before the excavations (photo Ivan Panayotov); 2. Granichar, Durankulak region; 3. Ezerovo, Varna lakes region; 4. Sredno selo, Vetrino region; 5. Pobeda, Dobrich-east region (photo: Stefan Alexandrov)

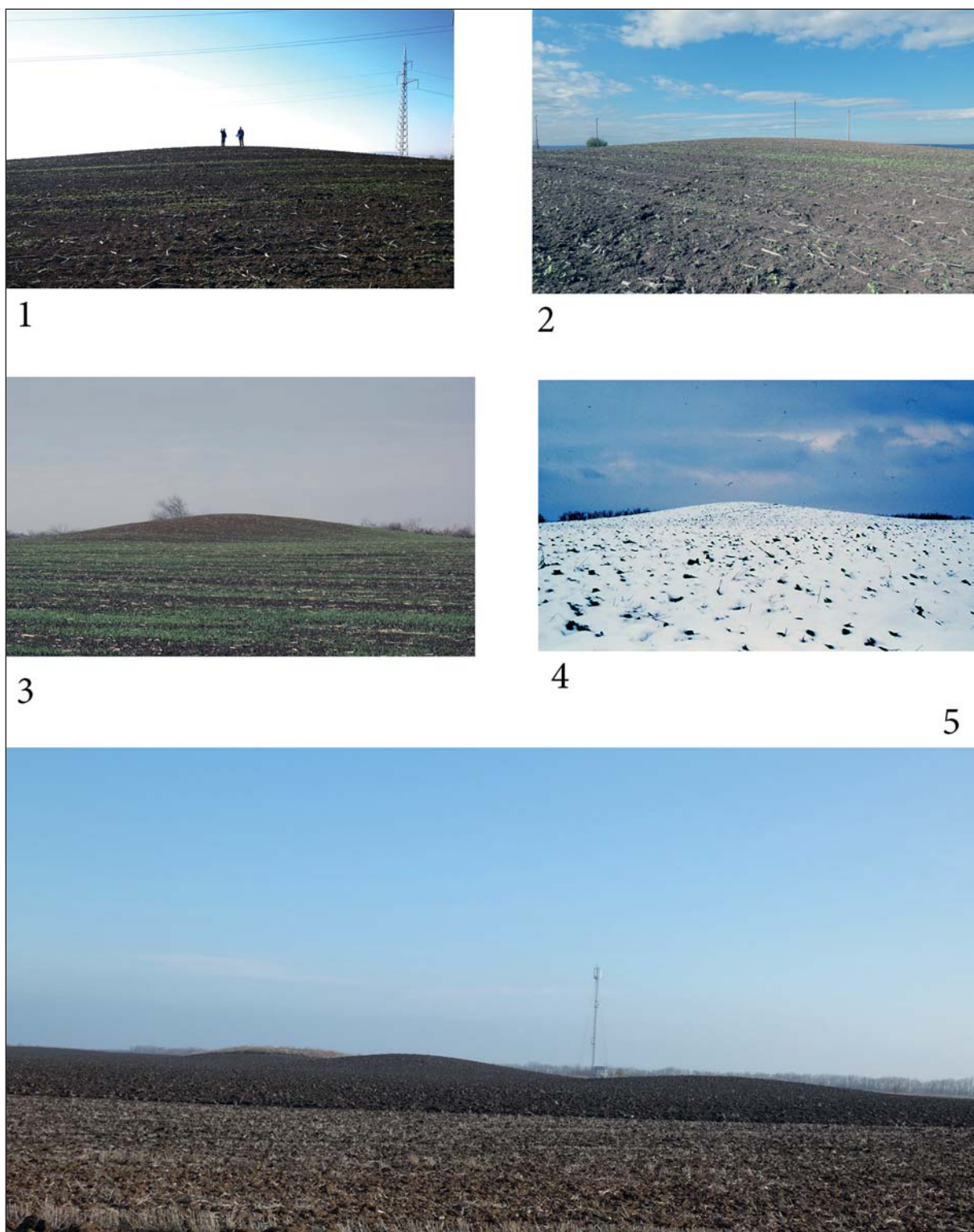
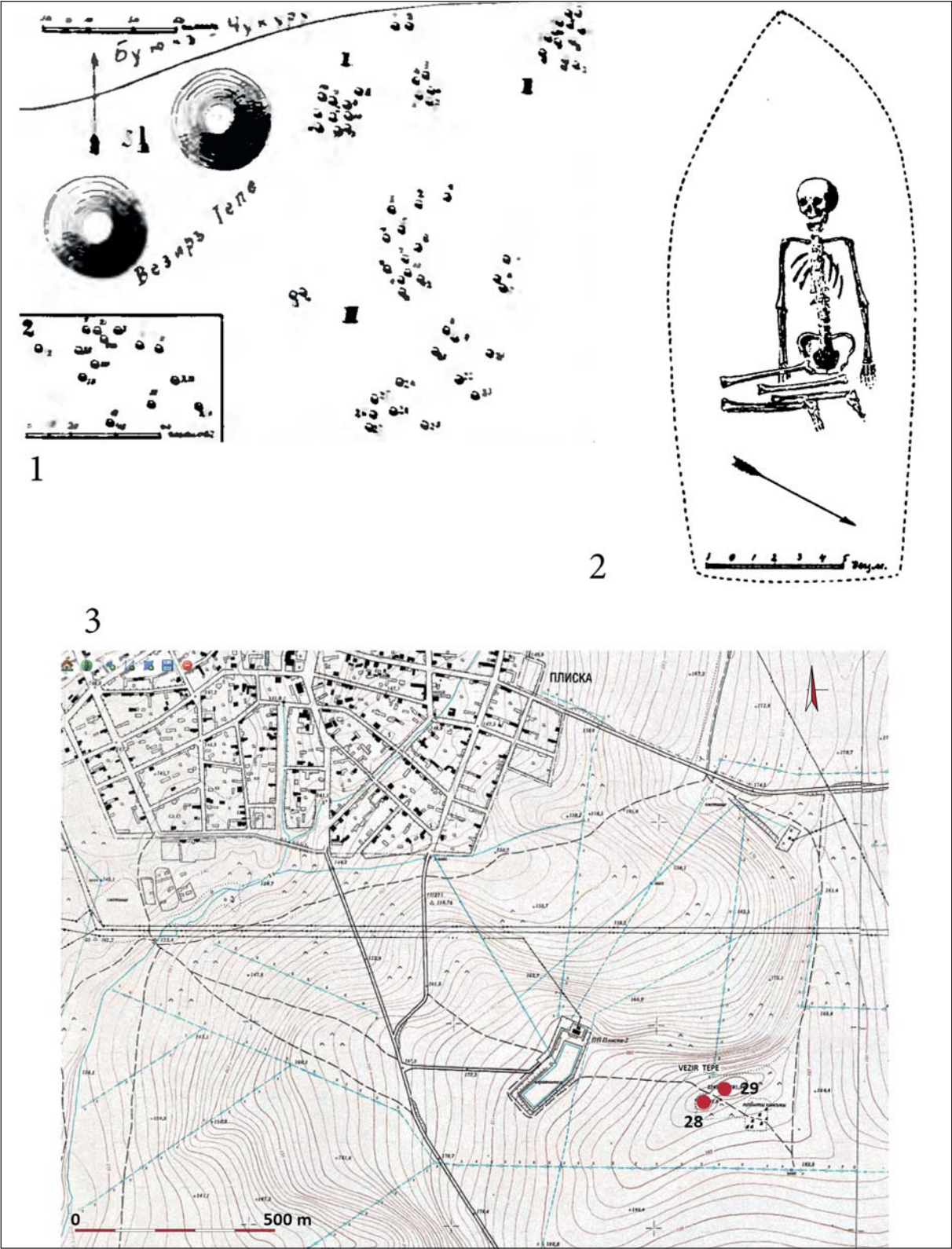


Fig. 10. North-East Bulgaria. Barrows with a height between 1–3 m. 1–2. Vetrino-1 necropolis; 3–4. Riltsi, barrow 264; 5. Barrows near Vakilno, Durankulak region (photo: Stefan Alexandrov)





## 2. The region west of Dobrich (Fig. 3.4)

### 2.1. The necropolises

The formal characteristics of the necropolises in this region do not differ from the ones east of Dobrich – set on the highest parts of plateaus or small hills and arranged in lines. Several necropolises are located in a 30 km area west of the modern town. The Riltsi necropolis is composed of more than 30 barrows (Dobrich museum archive Nos. 112–120, 228, 257–277) situated in a semi-circle on the small elevations immediately west of the town. Their dimensions vary from 1 to 5 m in height. Another necropolis composed of 20 barrows is situated in a North-South line 2 km west of the first one (Dobrich museum archive Nos. 180–188, 201–205, 210, 251–256). Two necropolises are located in Smolnitsa – Lovchantsi area with 10 and circa 20 barrows respectively. Further west, in Karapelit area several lines of barrows are visible. The westernmost one is the Geshanovo necropolis composed of at least 13 barrows (Fig. 3.4–5). Twenty km north of Geshanovo another necropolis composed of 13 barrows, set in a west-east line between Sredishte and Kolartsi villages is located (Fig. 3.9). The last two necropolises, in fact, mark the western border of the “big” EBA barrow necropolises in the region.

### 2.2. The investigations

Seven barrows have been excavated in the region so far (Table 7). In 1962, Lyubka Bobceva excavated a part of a barrow near Smolnitsa discovering a “...hocker inhumation grave with red ochre” (PANAYOTOV 1989, 132). Due to the lack of sufficient information, the grave will not be discussed here. In 1983, south of Zeglartsi village, two barrows were excavated by a team led by Ivan Panayotov. Two graves were discovered in each barrow (PANAYOTOV 1989, 120–127). In 1984, during rescue excavations, the same team researched a barrow near Geshanovo village that revealed four EBA graves (PANAYOTOV 1989, 127–132). In 1993, during the excavations of a Roman Age barrow necropolis near Pet mogili village, Georgi Atanassov investigated a partly destroyed EBA grave in barrow No. 4.<sup>28</sup> In 2000, during rescue excavations, two barrows were investigated south of Riltsi – suburban quarter of Dobrich town. Five graves were discovered in barrow 264, two – in barrow 260.<sup>29</sup> Finally, in 2011, during rescue excavations, a barrow near Kamentsi (part of the Sredishte - Kolartsi necropolis) has been investigated. A total number of 6 EBA grave was found there (VAGALINSKI 2020).

### 2.3. The graves

As in the previous region discussed, there is a direct relation between the size of the barrow and the number of graves in it. Most of the secondary graves had additional fill as well. The smaller barrows, in contrast with the Dobrich-east region, revealed at least two graves each. Twenty-two EBA graves were investigated here as follows: Riltsi, barrow 264 – five graves; Geshanovo – four graves; Kamentsi – six graves, Riltsi, barrow 260 – two graves; Zeglartsi 1 and 2 – two graves each, Pet mogili – one grave.

All primary graves were single; five of the deceased laid in supine position with flexed legs, two – in hocker position (Kamentsi, Pet mogili). All supine inhumations were of *adult males*; the hocker inhumation from Kamentsi – of a *16–25 years old female*. All primary grave-pits were rectangular, covered with wooden planks or barks. Covering of the floor was registered in all supine inhumations. All skeletons had red ochre over the bones. Inventory was discovered in Pet mogili grave only – a clay amphora-like vessel (Fig. 12.6).

<sup>28</sup> The grave was labelled as No.4. Part of it was destroyed, probably by looters. The results of the excavations are not published. The author would like to express his gratitude to Stanimir Stoychev (Shumen museum) for kindly giving permission to use the results of the investigations.

<sup>29</sup> Excavations led by the author.



Table. 7. Barrow necropolises west of Dobrich. Barrow graves investigated in 1983 (Zeglartsi and Pet mogili), 1984 (Geshanovo), 1994 (Belitsa and Stambolovo), 2000 (Riltsi), 2011 (Kamentsi)

Barrow/Grave	Dimensions: Diameter & Height	Stratigraphic position	Body Position	Dating	Ochre	Grave inventory
<b>RILTSI necropolis</b>						
<b>Riltsi 260</b> 260/1 260/2	25 m; 1.60 m	Primary Secondary	Supine with flexed legs Destroyed	Early Bronze Age ?	YES No	No No
<b>Riltsi 264</b> 264/1 264/2 264/3 264/4 264/5	50 m; 3.10 m	Secondary Secondary Secondary Primary Secondary	Hocker to the right Hocker to the right Extended Supine with flexed legs Semi-supine to the right	Early Bronze Age? Early Bronze Age? Early Bronze Age? Early Bronze Age Early Bronze Age	No No No YES YES	No No No No No
<b>GESHANOVO - PODSLON necropolis</b>						
<b>Geshanovo-1</b> 1/1 1/2 1/3 1/4	40 m; 1.40 m	Secondary Secondary Primary Secondary	Semi-supine to the right Destroyed Supine with flexed legs Destroyed	Early Bronze Age Early Bronze Age Early Bronze Age Early Bronze Age	YES  YES YES	YES YES No No
<b>ZEGLARTSI necropolis</b>						
<b>Zeglartsi-1</b> 1/1 1/2	60 m; 1.50 m	Primary Secondary	Supine with flexed legs Hocker to the right	Early Bronze Age Early Bronze Age	YES YES	YES No
<b>Zeglartsi-2</b> 2/1 2/2	21 m; 1.0 m	Secondary Primary?	Extended Supine with flexed legs	Early Bronze Age Early Bronze Age	YES No	YES No
<b>PET MOGILI barrow</b>						
<b>Pet mogili</b> 1/1	?	Primary?	Hocker to the left	Early Bronze Age	?	YES
<b>KAMENTSI - SREDISHTTE necropolis</b>						
<b>Kamentsi-1</b> 1/1 1/2 1/3 1/4 1/5 1/6	41 m; 2.40 m	Secondary Secondary Secondary Secondary Primary Secondary	Hocker to the left Hocker to the right Supine with flexed legs Destroyed Hocker to the right Hocker to the right	Early Bronze Age? Early Bronze Age Early Bronze Age Early Bronze Age Early Bronze Age Early Bronze Age?	YES YES YES YES YES YES	No YES No YES No No
<b>BELITSA necropolis</b>						
<b>Belitsa-1</b> 1/1	25 m; 1.50 m	Primary	Hocker to the right	Early Bronze Age	YES	YES
<b>STAMBOLOVO necropolis</b>						
<b>Stambolovo-1</b> 1/1	15 m; 1.0 m	Primary	Supine with flexed legs	Early Bronze Age	YES	No

All secondary graves were single as well; the buried individuals were of all sexes (data for 14 graves) as follows: six *adult males*; two *adult females*, four *adults* with no sex determination; one *juvenile*; and one *child* (11–14 years). We have secure data for the body position in eleven graves: one – in supine position with flexed legs; two – in semi-supine; six – in hocker position; two – in extended position. Supine and semi-supine inhumations were placed in rectangular pits with steps, covered with wooden planks, with an organic sheet covering the pit-floor. There is no data for the grave-pits of the hocker and extended inhumations. Red ochre was registered in all supine and semi-supine graves; no red ochre was found in extended and very much contracted hocker graves. Inventory was found in six graves: flints in

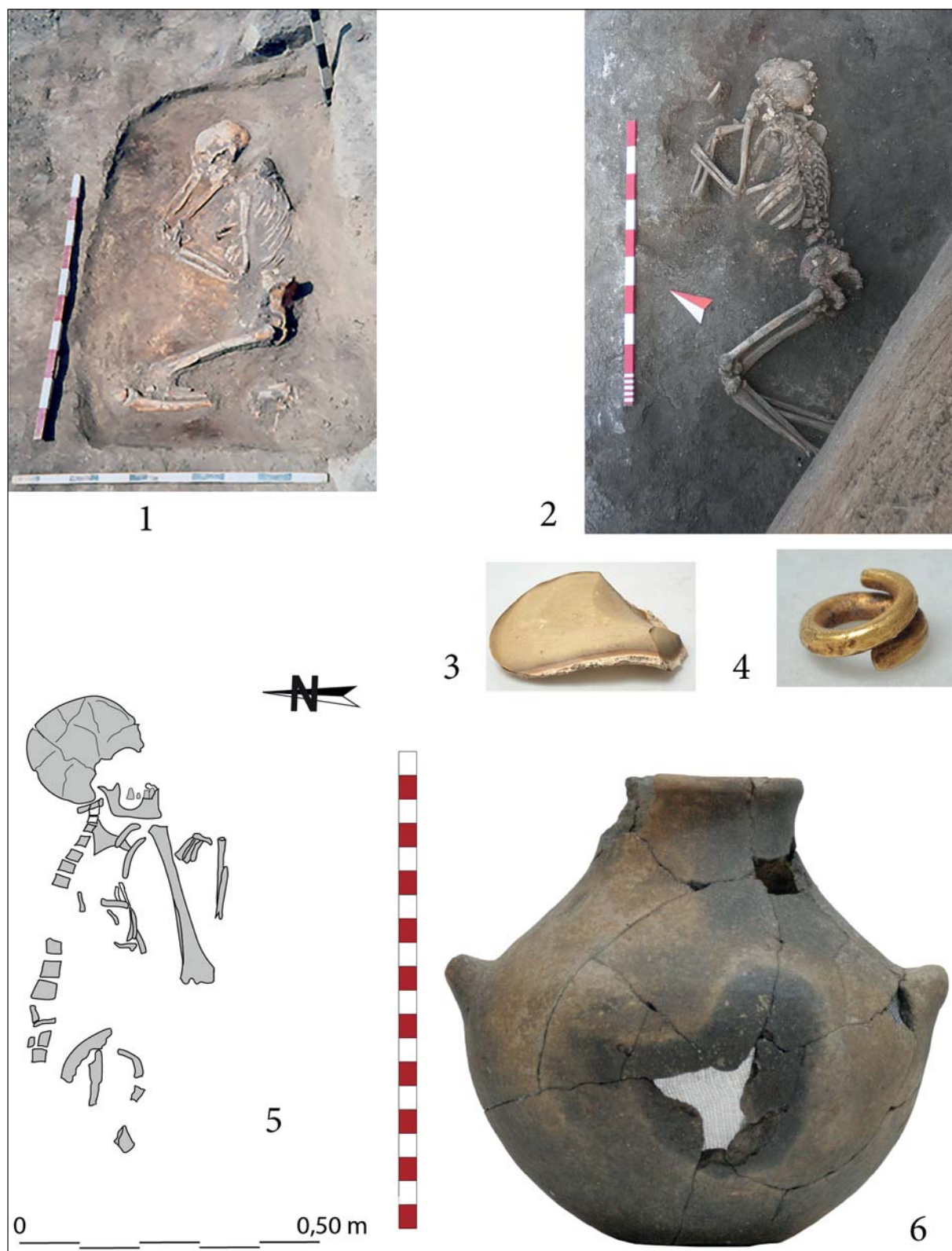


Fig. 12. North-East Bulgaria. Barrow graves with relaxed hocker inhumations, 3300–3100 BC.  
 1. Pliska-West, barrow 27, grave 1 (photo: Rasho Rashev); 2–4. Chudomir, feature 17 (after ALEXANDROV 2020b); 5–6. Pet mogili, barrow 4, grave 4 and inventory (photo: Stanimir Stoychev)

Geshanovo 1/1, Zeglartsi 2/1, Kamentsi 1/2 and 1/4; pottery fragments in Geshanovo 1/2 and traces of a metal hair ring in Zeglartsi 1/2.

### 3. Ruse – Silistra – Razgrad region

In that region the number of the barrows with EBA morphological and topographic characteristics is considerably reduced compared to the regions east and southeast of it. The EBA barrows form small necropolises of up to 8 barrows or stand alone. The size of the barrows is reduced as well, the biggest ones rarely reaching height of 3–4 m.

Only two EBA barrows have been investigated in that region so far, both in 1994 (*Fig. 3.11–12*). Belitsa barrow (Tutrakan region) is part of a necropolis composed of 8 barrows. It revealed one EBA grave – a relaxed hocker inhumation on the right side in a four-sided pit with steps, covered with wooden planks with an organic sheet covering the pit floor. Red ochre was spread over the body and the pit floor. Traces of two metal spirals were found in the skull area. Above the pit an enclosure of plasters/hearth? was discovered as well (ALEXANDROV – BENHAM 1995). Stambolovo barrow (Ruse region), less than 1 m in height, was part of a necropolis of four barrows located south of the village. A single inhumation in a rectangular pit, in supine position with flexed legs was discovered in the barrow (*Fig. 15.1*). Red ochre was spread over the body and the pit floor. No covering of the pit or its' floor is mentioned (STANCHEV 2005).

#### Anthropomorphic stelae

Recently, a stone anthropomorphic stela came to light from that region. It was found re-used in the walls of the Roman town of *Abritus*, near Razgrad (*Fig. 19.2*) (DİLOV 2021).

### Absolute Chronology of the Early Bronze Age Barrow Graves in North-East Bulgaria

At the end of 2020 we have at our disposal 33 radiocarbon dates from barrow graves in North-East Bulgaria, covering almost the entire EBA 1-2 time-span. Three chronological groups could be distinguished as follows: Group 1) 3300–3100 BC with four graves; Group 2) 3100–2900 BC with nine graves; Group 3) 2900–2500 BC with nineteen graves (*Plate 1*).

The earliest barrow grave in North-East Bulgaria so far is Riltsi 264/4: *adult male*<sup>30</sup> buried in supine position with flexed legs, arms alongside the body; head to southwest. Red ochre was spread over the body. The grave structure was a rectangular pit covered with at least 12 wooden planks; with an organic cover over the floor (*Fig. 13.2–5*). No inventory was found in the grave. Quite the same anthropological, body position, orientation and grave structure characteristics presented Belogradets 1/2 grave (*Fig. 13.1*). The other two graves from that lot presented relaxed hocker inhumations to the right, head in the eastern sector: Pliska-West 27/1 – *male, adultus* (*Fig. 12.1*) and Chudomir, feat. 17 – *female? Maturus* (*Fig. 12.2–4*). Red ochre was found over the bones of the individual from Pliska 27/1, pieces of red ochre, flint scraper and golden earring – in Chudomir, feature 17 (ALEXANDROV 2020b).

Nine graves enter the second chronological horizon – five supine inhumations with flexed legs, arms alongside the body, head in the western sector; three hocker inhumations and one triple grave. Three of the supine inhumations come from Dobrudja region – Geshanovo 1/3 (*Fig. 15.7*), Zeglartsi 2/2 and Riltsi 260/1 (*Fig. 15.8*). These were primary graves of adult males, buried in rectangular pits covered with wooden planks/barks, with organic cover of the pit-floors and red ochre over the bones.

<sup>30</sup> Anthropological analyses – Prof. Yordan Yordanov.



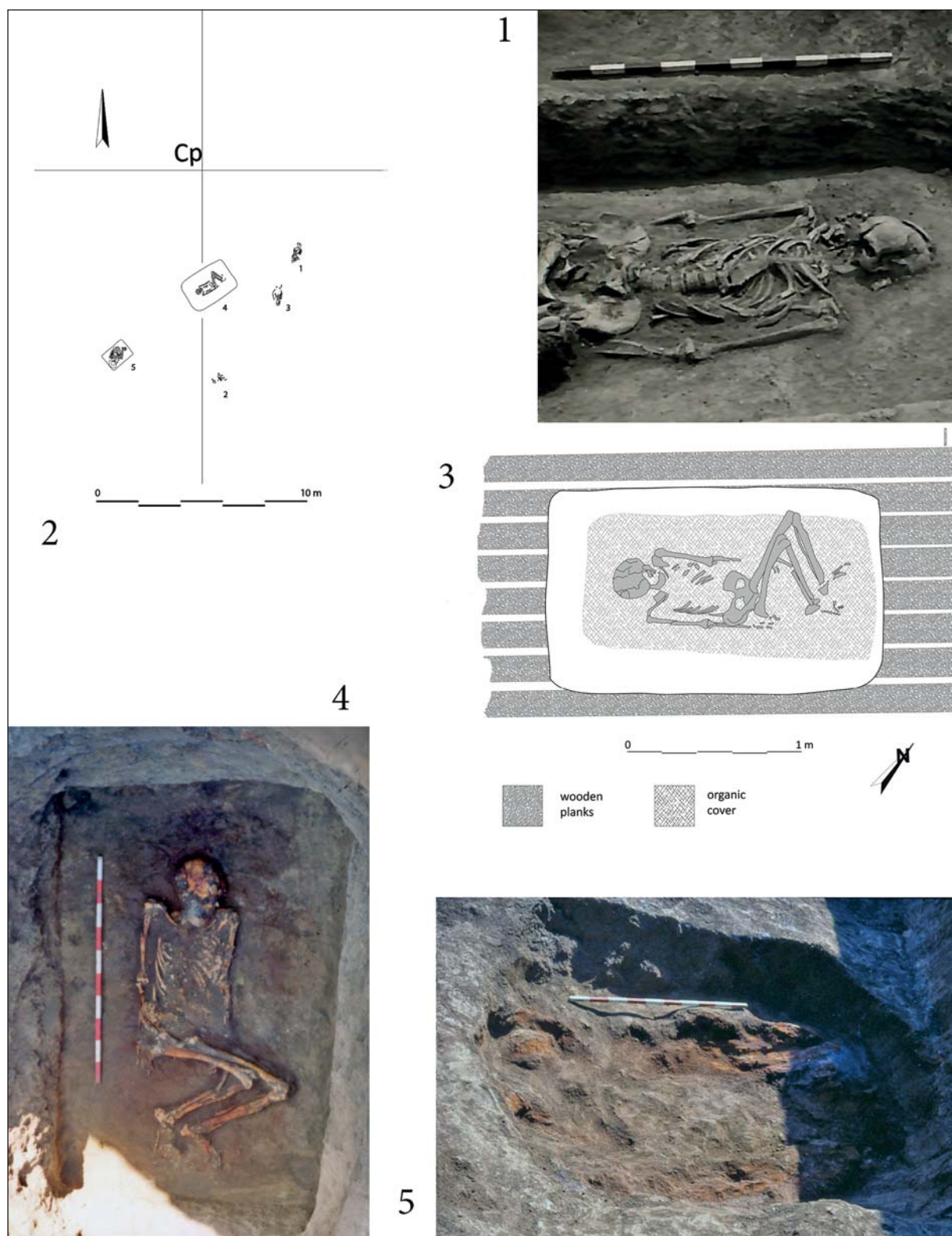


Fig. 13. North-East Bulgaria. Barrow graves with supine inhumations with flexed legs, 3300–3100 BC. 1. Belogradets 1/2; 2–5 (photo: NAIM archive). Rilti, barrow 264, grave 4 (photo: Stefan Alexandrov)



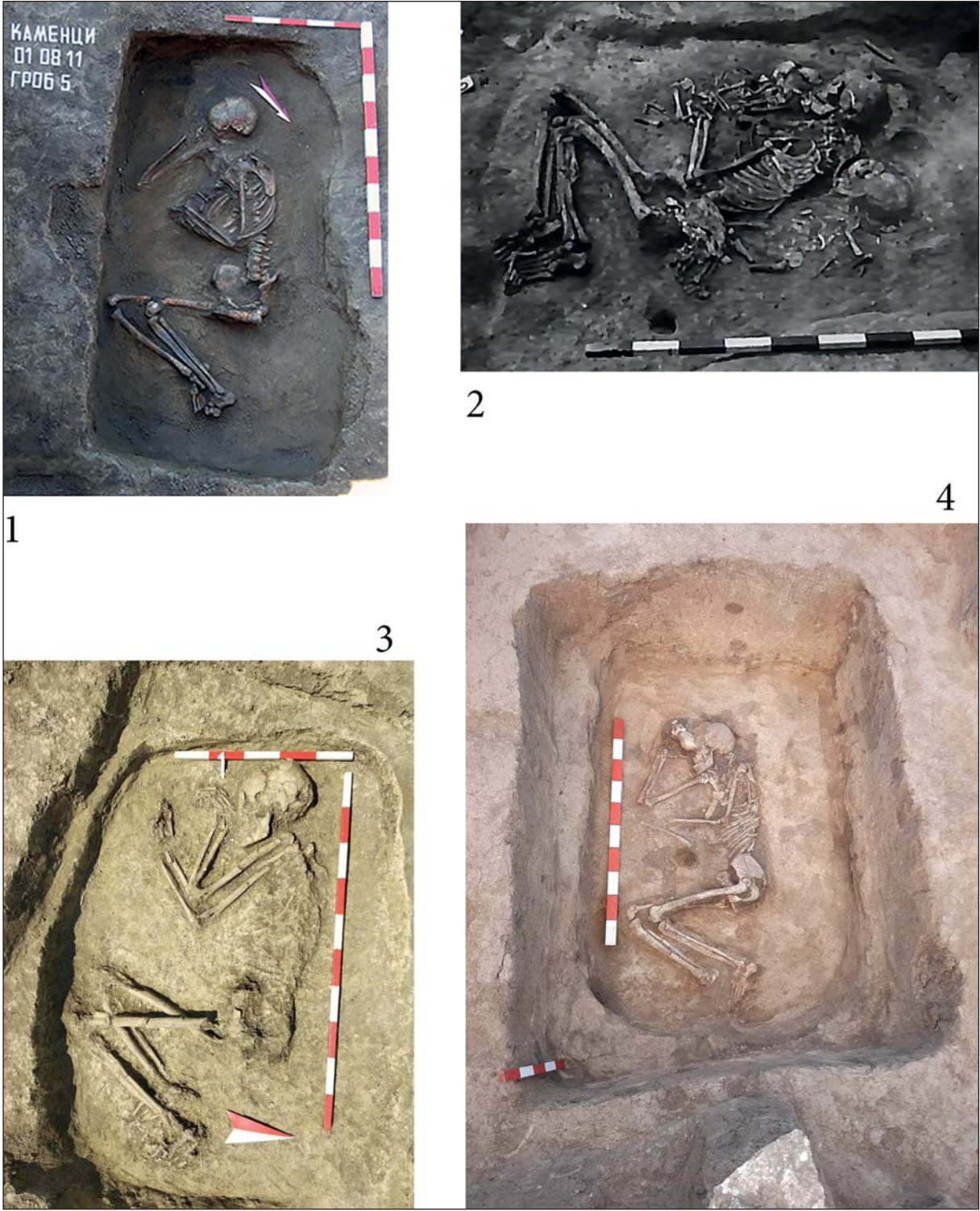


Fig. 14. North-East Bulgaria. Barrow graves with relaxed hocker inhumations, 3100–2900 BC. 1. Kamentsi 1/5 (after VAGALINSKI 2000); 2. Belogradets 3/2 (photo: NAIM archive); 3. Ralitsa 1/1 (photo: Plamen Karailiev); 4. Vetrino-2 7/1 (photo: Anelia Bozkova)





Fig. 15. North-East Bulgaria. Barrow graves with supine inhumations with flexed legs, 3100–2900 BC.  
 1. Stambolovo (after STANCHEV 2005); 2. Chudomir, feature 10 (photo: Stefan Alexandrov); 3–6. Chudomir, feature 5 (after ALEXANDROV 2020b); 7. Geshanovo 1/3 (photo: Ivan Panayotov); 8. Riltsi 260/1 (photo: Stefan Alexandrov)

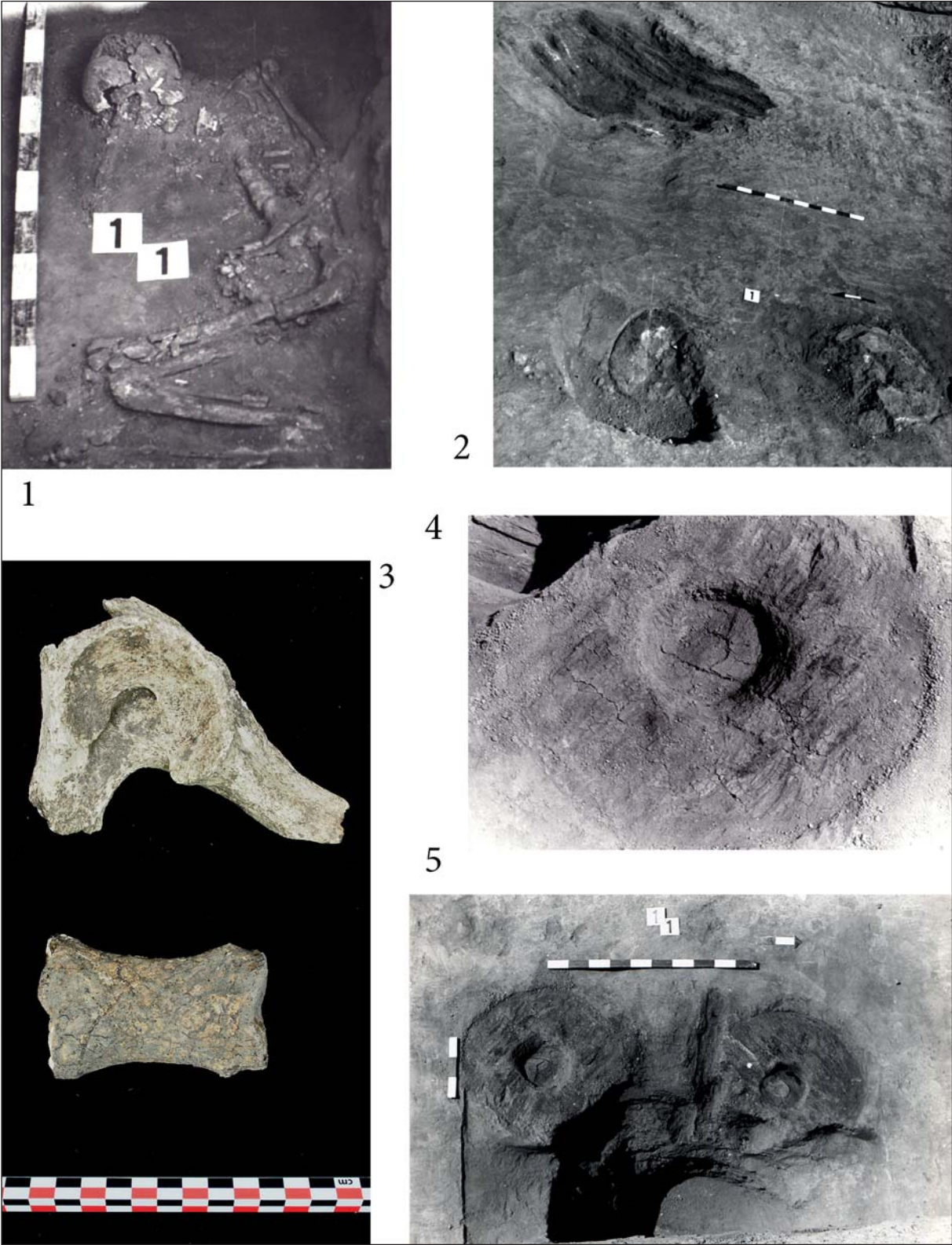


Fig. 16. North-East Bulgaria. Plachi dol-1, barrow 1, graves 1 and 2. 2900–2500 BC.  
1. Grave 1 (photo: Ivan Panayotov); 2. Graves 1 and 5; 3. Grave 2, bones from *Equus caballus* (photo: Nadezda Karastoyanova); 4–5. Grave 1 – wooden wagon (details) (photo: Ivan Panayotov)





Fig. 17. North-East Bulgaria. Barrow graves with hocker inhumations, 2900–2500 BC. 1–3. Vetrino-1, barrow 34, grave 3; 4. Vetrino-1, barrow 34, grave 4 (photo: Stefan Alexandrov); 5. Vessel from Vetrino-2, barrow 7, grave 2 (after BOZKOVA – TONKOVA 2020); 6. Zeglartsi, barrow 1, grave 2; 7. Pliska-West, barrow 21, grave 1 (photo: Rasho Rashev); 9. Belitsa, grave 1 (photo: Stefan Alexandrov); 8, 10. Pliska-West, barrow 26, grave 1 (photo: Rasho Rashev)



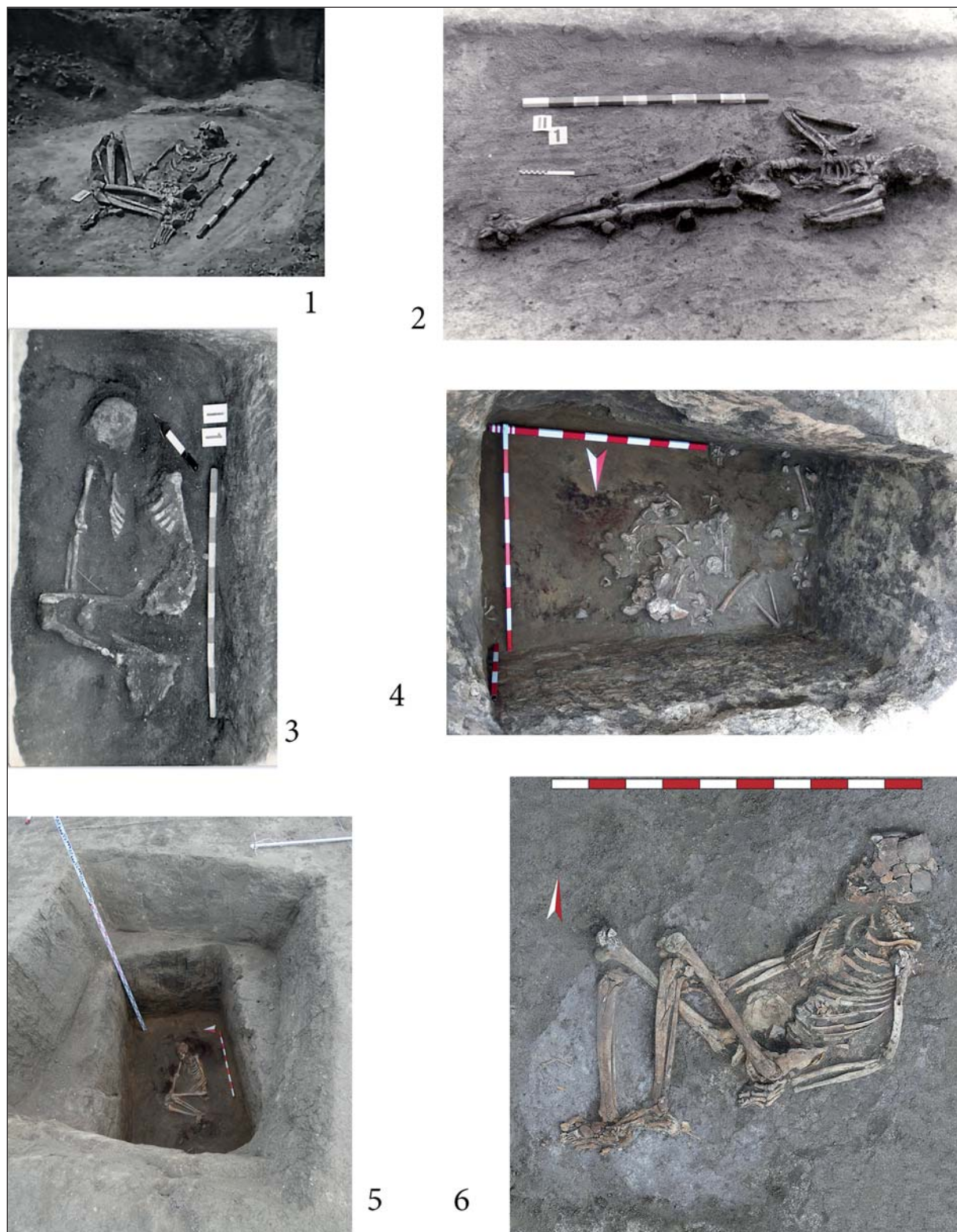


Fig. 18. North-East Bulgaria. Barrow graves 2900–2500 BC. 1. Belogradets barrow 2, grave 1 (photo: NAIM archive); 2. Zeglartsi, barrow 2, grave 1 (photo Ivan Panayotov); 3. Geshanovo, barrow 1, grave 1 (photo Ivan Panayotov); 4. Vetrino-1, barrow 34, grave 2; 5. Chudomir, feature 9 (photo Stefan Alexandrov); 6. Chudomir, feature 18 (photo: Stefan Alexandrov)





Fig. 19. North-East Bulgaria. Stone anthropomorphic stelae. 1. Nevsha (photo Vladimir Slavchev);  
2. Razgrad/Abritus (photo: Dilen Dilov); 3. Ezerovo (photo: Vladimir Slavchev);  
4. Plachi dol-2 necropolis (photo: Kalin Dimitrov)

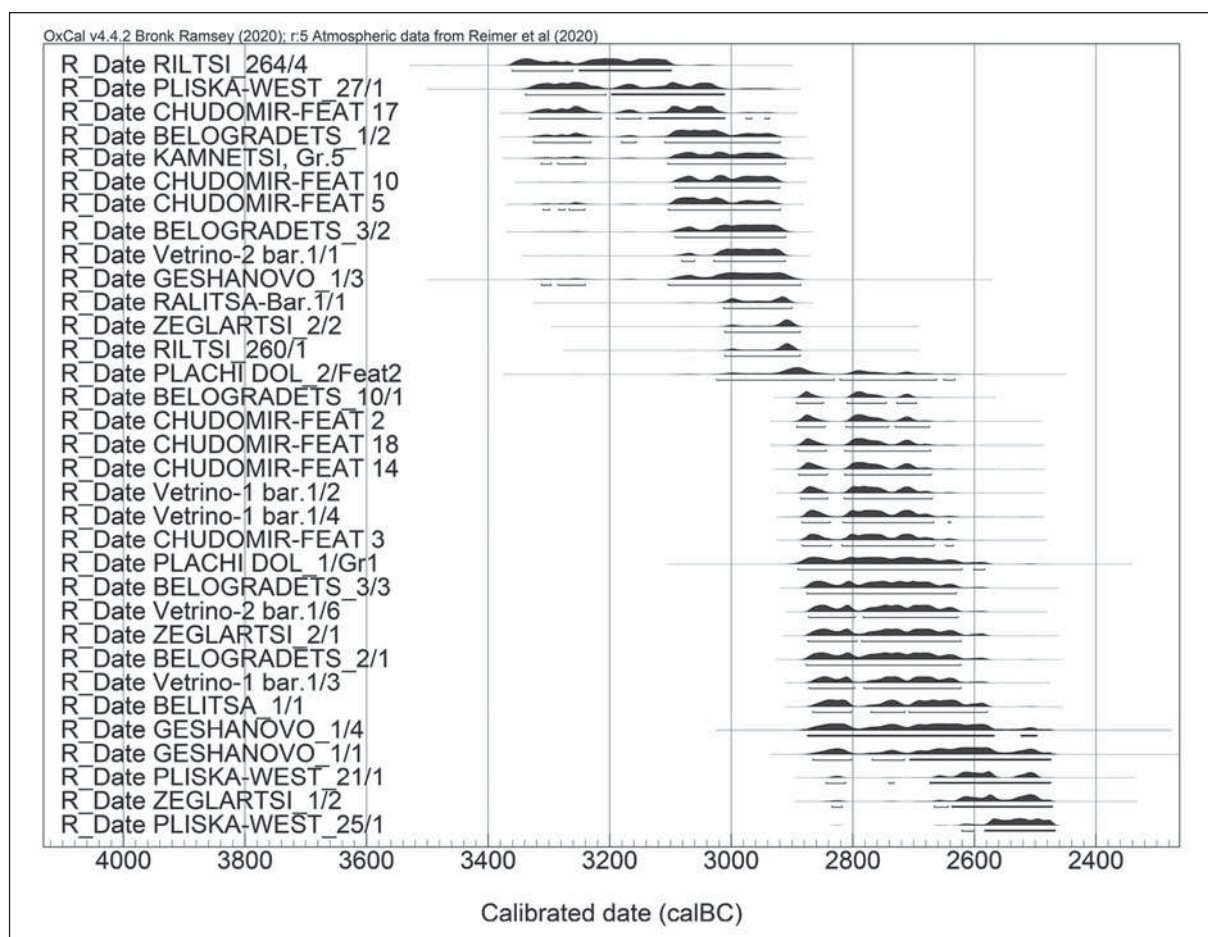


Plate 1. Barrow graves in North-East Bulgaria. Radiocarbon dates

No inventory was found in those graves. The two graves from Chudomir are secondary, with additional fill and stone ring surrounding them. In feature No. 5 from there three vessels were found (Fig. 15.2–6).

All three hocker inhumations from that group were primary graves – Kamentsi, grave 5; Vetrino-2 7/1 and, Ralitsa grave 1/1 (Fig. 14.1, 3–4). The deceased (two *adult males* and 16–25 years old *female*) were placed in relaxed positions, turned to the right, with their head in the western sector. The grave-pits were rectangular with rounded corners, covered with wooden planks/barks. Red ochre but no inventory was found in all three graves. The triple grave from Belogradets (*adult male* and two *infants*) follows the same pattern - relaxed hocker position with the head in the western sector, pieces of red ochre in the grave-pit (Fig. 14.2). As inventory, an animal bone near the male skull is mentioned.

Nineteen graves and one cult feature enter the third chronological group (two supine inhumations with flexed legs; seven semi-supine inhumations; seven hockers, one extended inhumation, one grave with scattered bones, one grave without a clear body position). Six graves are primary: the two supine inhumations from Belogradets – *adult males* buried in rectangular pits, covered with wooden planks; ochre over the body, no inventory (Fig. 18.1); the semi-supine inhumation Pliska 25/1 – an *adult individual*, the two *adult males* in hocker position from Belitsa (Fig. 17.9) and Pliska 21/1 (Fig. 17.7), and the scattered bones of an *infant* from Vetrino-1 34/2 (Fig. 18.4).



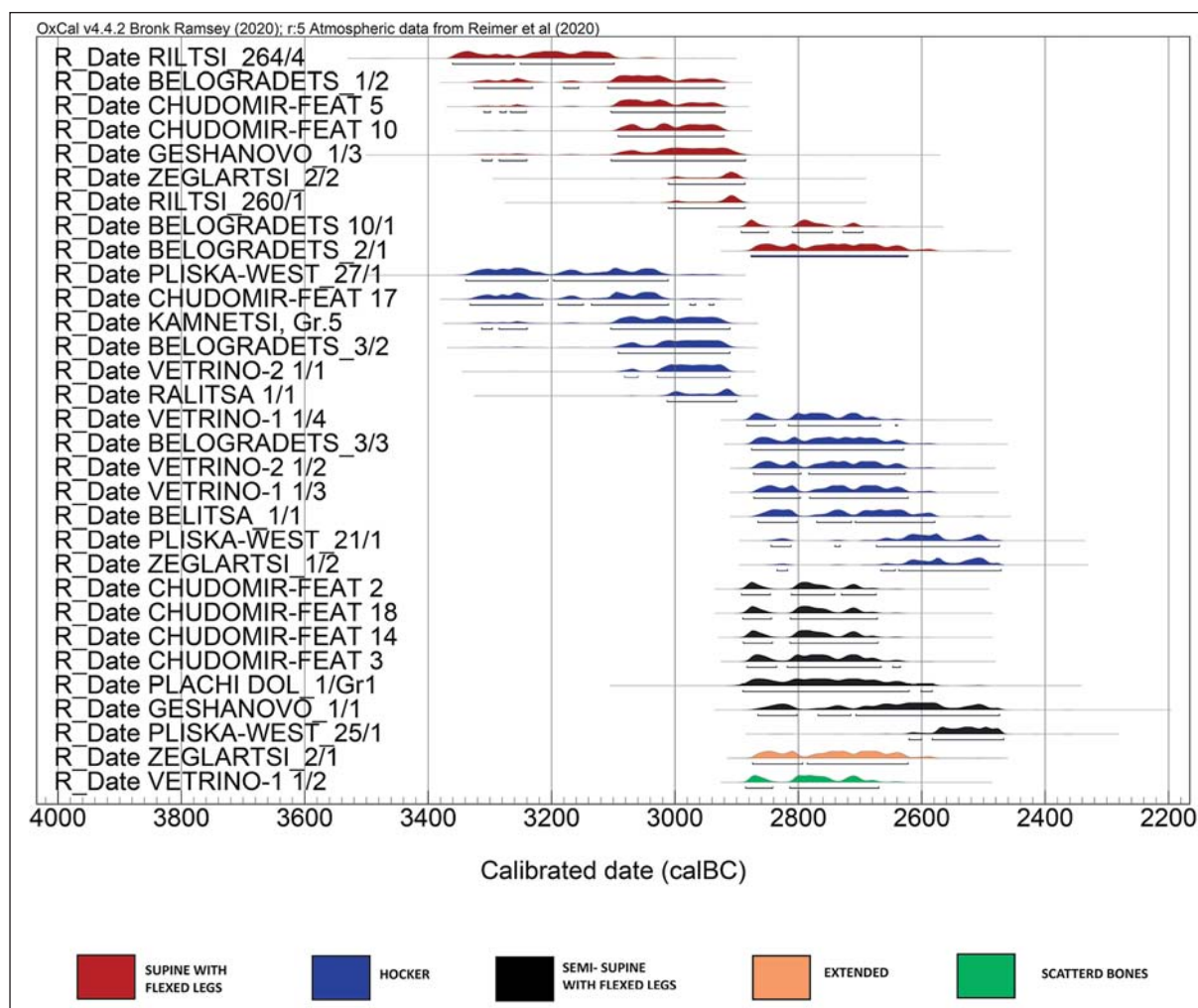


Plate 2. Barrow graves in North-East Bulgaria. Radiocarbon dates according to the position of the deceased

From the secondary graves from that group, eight were in semi-supine position – Chudomir, features 2, 3, 9, 13, 14, 18 (*Fig. 18.5–6*); Plachi dol-I 1/1 (*Fig. 16.1*); Geschanovo 1/1 (*Fig. 18.3*). Five secondary graves revealed hocker inhumations – Belogradets 3/3; Zeglartsi 1/2 (*Fig. 17.6*); Vetrino-1 34/3, 4 (*Fig. 17.1–4*); Vetrino-2 7/6 (*Fig. 5*), one extended inhumation – Zeglartsi 2/1 (*Fig. 18.2*). One grave (Geschanovo 1/4) was destroyed prior to the excavations, so the actual position of the body was not clearly identified.

Radiocarbon dates show that the barrow graves in hocker position cover the entire time-span of the EBA 1-2 in North-East Bulgaria; from 3300 BC onwards – in Targovishte–Shumen–Provadiya region, from 3100 BC – in Dobrudja as well (*Plate 2*). The supine inhumations with flexed legs, according to the radiocarbon dates available, cover the time-span between 3300–2600 BC. Given the lack of sensitive grave inventory, the rest of the primary supine inhumations with flexed legs could not be securely assigned to one of the three chronological groups. It seems that the semi-supine inhumations are later than the first two groups, currently entering the third chronological period only. For the moment, the same is to be said for the extended inhumations in the region as well.



### Some conclusions

Barrow graves were a constant feature of the EBA landscape in North-East Bulgaria. The earliest graves, so far, are supine inhumations with flexed legs and relaxed hocker inhumations (two graves in each group), with radiocarbon dates in 3300–3100 BC period. Those two positions of the deceased remained the only ones until approximately 2900 BC with the dominance of the supine inhumations in South Dobrudja region and relaxed hocker inhumations to the south of it, in Targovishte-Shumen-Provadiya region.

According to the current radiocarbon database, while the hocker inhumations are a constant characteristic of the EBA mortuary practices in the region until 2500 BC, the supine inhumations with flexed legs disappear earlier – around 2600 BC. It seems that in Dobrudja, they are replaced by semi-supine inhumations, a fact discussed by V. Dergacev and I. Panayotov more than 30 years ago (DERGACEV 1986; PANAYOTOV 1989). Radiocarbon dates suggest that, in that region this change happened after 2900 BC; the latest published  $^{14}\text{C}$  date for supine inhumations in Dobrudja so far being the one from Rahman, barrow 1, grave 2 (Tulcea region): 2910–2670 cal BC (95.4% probability) (AILINCĂI *et al.* 2014). The assumption is supported by the stratigraphic data from Plachi dol-1, Riltsi 264 and Shabla barrows but, still needs additional data to argue with, especially radiocarbon dates for the primary semi-supine inhumations from Plachi dol-1 5/1 and Belogradets.

The barrow graves discussed here raise several more questions. The first one is related to the hocker graves in the region. More than twenty years ago I. Manzura assigned some relaxed hocker graves from North Dobrudja to Cernavodă I period (MANZURA 1999, 116). A study based on typological characteristics and comparative analysis of the barrow graves in North Bulgaria published almost 10 years ago allowed the author to assign Belitsa, Kalugeritsa 3/4, Kiulevcha 1/3 and Madara 4/4 graves to Cernavodă I - Cernavodă III period (ALEXANDROV 2011, 314–316). But, the reality of the radiocarbon dates appeared to be quite different, the grave from Belitsa actually dating to 2866–2581 cal BC (*Plate 2*), thus requiring a new approach on those graves based on the new data available:

So far, according to the current  $^{14}\text{C}$  database, no barrow grave from North-East Bulgaria is to be assigned to a period prior to 3500 BC. As pointed above, the earliest relaxed hocker graves date to 3300–3100 BC period. Alongside Chudomir, feature 17 and Pliska 27/1, three more relaxed hocker graves could possibly enter this time-span: Kalugeritsa 3/4 (MIKOV 1936, 4–5), Kiulevcha 1/3 (MIKOV, 1936, 8) both graves being surrounded with rings of stones and, Pet mogili, barrow 4, grave 4 (*Fig. 12.5*). All five graves discussed were primary; grave-pits were covered with wooden planks; deceased of both sexes were buried in relaxed hocker position with head in the eastern sector, arms bent at the elbow with palms in front of the head/torso; red ochre was spread over the body. Three out of the five graves had inventory: golden hair ring and flint scraper in Chudomir (*Fig. 12.3–4*), a silver open ring in Kalugeritsa 3/4 and, amphora-like vessel in Pet mogili (*Fig. 12.6*). For the last one some Cernavodă and Late Tripolye elements were sought (ALEXANDROV – KAISER 2016, 365). Another lot of at least four primary graves – Ralitsa 1/1, Belogradets 3/2 - triple grave, Vetrino-2 7/1 and Kamentsi 1/5 with the same body position and other characteristics but with head in the western sector dates to 3100–2900 BC period (*Plate 2*). Grave inventory – an animal bone was found in Belogradets 3/2. Geographically, the relaxed hocker graves appear in Targovishte-Shumen-Provadiya region around 3300 BC, from 3100 BC onwards – in South Dobrudja as well.

A second hocker graves group could be distinguished in North-East Bulgaria as well – with an angle formed by the spinal column and the legs of the deceased around 90°, one of the arms placed alongside the body, the other one bent at the elbow with palm in front of the torso (*Fig. 17*). The group combines at least 12 primary (Pliska 26/1 and Belitsa) or secondary (Kiulevcha 1/4; Belogradets 3/3; Vetrino-1 34/3,

4 (Fig. 17.1–4); Vetrino-2 7/6; Vetrino-3 1/1, 3, 5; Zeglartsi 1/2 (Fig. 17.6); Kavarna graves. In Pliska 26/1 (Fig. 17.8) and Belogradets 3/3 clay vessels were found. Radiocarbon dates place the group in 2900–2500 BC period. It seems that a general tendency towards bending the body of the deceased into a more contracted hocker position through time is to be seen in the region but this assumption needs additional proof. If this observation is correct, the graves from Vetrino-2 7/2 (Fig. 17.5) as well as Vetrino-3 1/8, Madara 3/3 and 4 (MIKOV 1934, Fig. 296. c, d) with clay pots described as “*beaker vessels*” could also be assigned to 2900–2500 BC period. Similar, or a bit earlier, date for such vessels is proposed for the region North of the Danube river as well (FRÎNCULEASA – PREDA – HEYD 2015, 23, Fig. 13).

The third group of BA hocker graves in the region combines the very strongly contracted hocker graves with legs in front of the torso and arms in front of the head. They are always secondary, with simple pits dug into the barrow fills without additional piling. The  $^{14}\text{C}$  dates and grave inventory – clay cups, place them in the Middle Bronze Age or, the first half of the 2<sup>nd</sup> millennium BC (ALEXANDROV 2011, 317).

Several EBA primary or secondary hocker inhumation barrow graves are known from North Dobrudja as well – Anadolkoï, (SCHUCHHARDT – TRAEGER 1918, Abb. 4); Baia/Hamangia (LĂZURCĂ 1980, Pl. 1/3); Medgidia, (SCHUSTER *et al.* 2011, Fig. 33); Rahman (AILINCĂI *et al.* 2016, Fig. 7), Sabangia and Zebil (SIMION 2003, Fig. 4, 8), Frecăței (VASILIU 2004), Nalbant (VASILIU 2008), Luncavița (VASILIU 1995a), Mihai Bravu (VASILIU 1995b), etc. Unfortunately, no radiocarbon dates are available for these graves. The only  $^{14}\text{C}$  date that could be of some use comes from Rahman, barrow 2, grave 5 (two adult male individuals buried in hocker position) – 2570–2340 cal BC (95.4% probability) that could give, in my opinion, a *terminus ante quem* for the graves under discussion (AILINCĂI *et al.* 2016).

Although located at a long distance to the North, in North-West Pontic area, some parallels with the barrow graves from the so-called “Vânători – Bolotești” and “Bursuceni – Zhivotilovka” groups could be made. The latter graves were related to the so-called “horizon of Late Trypillia - C III monuments”. They presented relaxed hocker inhumations on the left or right side; arms in front of the head or torso. Radiocarbon dates from Krasnoe, barrow 9 and Bursuceni place this barrow grave group/s in the last quarter of the 4<sup>th</sup> millennium BC (MANZURA 2016; DEMCHENKO 2016). That relates them chronologically to the hocker graves of the first chronological group in North-East Bulgaria. For the first group, located by Florentin Burtănescu north of The Danube delta, hocker graves in rectangular pits, red ochre and clay vessels are known (BURTĂNESCU 2002, 393–395, Table VII). For establishing the chronological position of the group, Burtănescu used certain parallels with Smeeni – Movila mare, grave 13 vessels (BURTĂNESCU 2002, 395). The grave under discussion belongs to chronological phase IIb of the barrow, with radiocarbon dates for two other graves from that phase – Nos. 16 and 18, which allow us to presume its dating between 2900–2600 BC (FRÎNCULEASA *et al.* 2017, 74–76, 110). Thus, the graves from “Vânători – Bolotești” group could be related to the hocker graves of the third chronological group in North-East Bulgaria.

The data discussed above point, at least for the earlier lot of hocker graves in North-East Bulgaria, to a north-eastern connection. In this context the Durankulak necropolis is very important with its 17 graves (VAJSOV 2002). Although the nature of the necropolis (barrow or flat) or the date of the different graves are still arguable (MANZURA 2005), the presence of some Cernavodă III and Usatovo elements in the graves characteristics there is indisputable.<sup>31</sup> The Usatovo elements are clearly visible in some barrows from the northern part of Dobrudja like Luncavița, Drumul vacilor, Barrow I, or the graves with a cairn of stones and rings of stones from Mihai Bravu, Murighiol or Tariverde (ALEXANDROV 2011). Additional arguments in this direction is the fact that Pliska and Pet mogili relaxed hocker graves

<sup>31</sup> This controversial character of the finds was the reason not to include it in the present analyses.

are located 15 km south and northeast, respectively, from the Cernavodă III site near Mirovtsi village (ZMEYKOVA 2001).

3300–3100 BC hocker barrow graves are present west of Dobrudja, in Wallachia, as well. There, they appear as primary graves, often encircled by rings of stones. However, in these regions the multiple graves as well as “post-mortem body manipulation” dominate (FRÎNCULEASA – PREDA – HEYD 2015, 56, 83; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020, 89–91). As previously discussed, it is quite possible that some of the relaxed hocker graves from central North and North-West Bulgaria such as Goran-Slatina barrow VII, grave 5 (KITOV – PANAYOTOV – PAVLOV 1991) and Tarnak barrow I, grave 2 (TORBOV 1994) to actually date to the period discussed (ALEXANDROV 2011, 316). Such graves appear at the same time even west of the Carpathians – in the Sárretudvari-Órhalom barrow for example (DANI – NEPPER 2006). Finally, south of the primary region discussed here – in Thrace, relaxed hocker graves appear as early as 3100–2900 BC (ALEXANDROV 2020a, 158).

The second question is related to the EBA extended barrow inhumations in the region. During the last twenty years several studies dedicated to this problem were published (BURTĂNESCU 2002, 395–396; ALEXANDROV 2010; MANZURA 2010; FRÎNCULEASA – MIREA – TROHANI 2017). Generally, there are quite a few extended barrow graves north of the region discussed here: Anadalkioi 1/1, Chilia Veche 2/2, Frecăței 2/1. To that lot the grave from Vitănești could be added, with a radiocarbon date DeA-12800: 4256±30 BP (FRÎNCULEASA – MIREA – TROHANI 2017). The date from the Zeglartsi extended grave fits the same chronological period, so there is at least one chronological horizon with extended barrow graves in the region that is securely dated between 2900–2500 BC. So far, there are no extended graves in North-East Bulgaria that could be dated earlier, such as Polsko Kosovo barrow, grave 1 in Central North Bulgaria (STANCHEV 2002; ALEXANDROV 2011, 314).

The last question that the North-East Bulgaria graves raise, is related to the chronology and nature of the barrow graves with supine inhumations with flexed legs. First of all, although the earliest dates for such graves in the region look “too early”, it should be stressed out that they do not stand alone in the respective chronological table. In North Dobrudja, the most reliable of the four available <sup>14</sup>C dates from Hamangia – 4530±65 BP (BURTĂNESCU 2002, Table XIII/5, 17, 20, 24) enters the time span 3496–3014 BC (95.4% probability). Considering this, more similar early dates for such barrow graves in Dobrudja are to be expected. Further north, in North-West Pontic area barrow graves with supine inhumations with flexed legs entering the 3300–3100 BC time-span, or even earlier, come from Mayaki-82, 1/9, Novoselitsa 19/7, Liman 2/2, Petrești 1/8, Sărăteni 1/4 (IVANOVA 2013, 15, Табл. 1; 4). Currently, in the Lower Danube region and Upper Thrace such early dates for supine inhumations with flexed legs barrow graves are known from the discussed region only. In the later periods, 3100–2500 BC, such graves appear in the other parts of the Lower Danube and Upper Thrace, Vojvodina and Hungarian Plain (FRÎNCULEASA – PREDA – HEYD 2015; KAISER 2019; PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020; ALEXANDROV 2020a, KOLEDIN *et al.* 2020; DANI 2020).

The supine inhumations with flexed legs in North-East Bulgaria present every single feature of the mortuary practices that define the term “Yamnaya Culture” west of the Black Sea: primary (mostly adult males) supine inhumations with flexed legs with head in the western sector; red ochre spread over the body, especially the head, wrists and feet; rectangular pits covered with wooden planks; organic cover over the pit floor; with other words – everything that in 2007 was defined as “Yamnaya package” (HARRISON – HEYD 2007). The data is very strong, with additional elements supporting this statement such as the metal hair rings, the wooden wagons (Plachi dol-1, barrow 1) and the stone anthropomorphic stelae (Plachi dol-1 and 2, Ezerovo, Nevsha, Razgrad). All these monuments were, more than 30 years ago, included by Ivan Panayotov in the “Lower-Danubian variant of the Yamnaya Culture” (PANAYOTOV 1989). In the frame of the “Western Yamnaya groups”, Dobrudja is the region “...we can find the

first larger concentration of typical Yamnaya tumuli and burials” (HEYD 2011, 536). The nature of the appearance of those graves in North Dobrudja and North-East Bulgaria is sought by most of the specialists in a migration/s around and after 3100 BC of “Pit-Grave populations” from the North-Pontic steppes into the Lower Danube area (DERGACEV 1986; PANAYOTOV 1989; YAROVOI 2000; MOTZOI-CHICIDEANU 2011, 225–279; HEYD 2011; KAISER – WINGER 2015; FRÎNCULEASA – PREDA – HEYD 2015; ALEXANDROV – KAISER 2016; KAISER 2019). The new radiocarbon dates will, probably, “push back” these events with at least 200 years.

Of course, there are attempts, more or less successful, to ignore such migration/s. In my opinion, these two, almost excluding each other theses, are the result of different approaches and different perspectives on the problem. If it is to paraphrase the famous expression, sometimes we cannot see the trees for the forest; thus either there is no such phenomenon as “Yamnaya graves” but common European religion beliefs reflected in the mortuary practices (for example LESHTAKOV 2011) or, almost every EBA barrow grave in the Northern Balkans is to be assigned to the “Yamnaya Culture” (for example NIKOLOVA 2000; IVANOVA 2014). In reality, the EBA barrow graves in Northern Balkans appeared to be, especially after the last decade of investigations, a big, colourful mosaic, from which we have only fragments that are still to be re-united to fully restore the 4<sup>th</sup>–3<sup>rd</sup> millennium BC history of the region.

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# Interactions in the Albanian Early Bronze Age – Evidence for Yamnaya connections?

LORENC BEJKO

## Abstract

*The beginning of the Bronze Age is characterised by visible changes in material culture and burial customs in Albania. Previous studies paint a picture of changes in the Early Bronze Age caused by limited immigration and contribution of many novel cultural features mixed with local Neo-Eneolithic traditions that dominate the archaeological contexts. I consider as correct the main interpretations of the character of the Early Bronze Age provided by most of the previous Albanian studies, and will try to argue in this paper that the current evidence from settlements, burials and material culture points at a society that has experienced fluxes of new people and ideas, which together with new forms of economic activities, are triggering important social changes. The argument here focuses on the first appearance of burials under tumuli in this region, their characteristics and spatial distribution. The main features of the burial ritual are discussed and compared with neighbouring geographical and cultural areas. A special place is dedicated here to those burials that most probably belong to newcomers who become responsible for the introduction of a new philosophy of death, through burial symbols and rituals. The striking similarities with the Yamnaya burial ritual will be pointed out, in order to sustain the potential connection of the Albanian Early Bronze Age communities with similar transformation processes occurring elsewhere on the continent. The view taken here is that of a dynamically transformed cultural landscape at the beginning of the Early Bronze Age, which reflects not simply the emergence of a new burial ritual, but of a rather new social order stimulated by the emergence of locally relevant leaders, interconnected with the wider Bronze Age world. The paper will also try to explore the differences in settlement patterns and nature of material culture of the new Bronze Age and compare them to the previous Neolithic and Eneolithic periods, in order to assess as much as possible, the “newness” of the EBA in aspects other than burial rituals. On the one side, I hope to demonstrate the role of population contacts as a source of inspiration for social change, on the other the manipulative effect of the emerging elite through the adoption of new burial forms.*

**Key words:** Albania, Early Bronze Age, Yamnaya, tumuli, Southeastern Europe

In the long list of topics of prehistoric archaeology in Albania, few other periods have attracted the attention of numerous studies and authors as did the Early Bronze Age (EBA). The reason of this interest, I believe, rests with the very nature of the Early Bronze Age as a period of radical changes in material culture, in burial rituals, socio-economic system, population movements and the impact these factors had on the future developments of the Bronze Age local populations. Describing and explaining change, after all, sounds more interesting and challenging than describing and explaining *stasis*, even if the later would be at least as important in understanding human societies. Frano Prendi is the first to have summarized the characteristics of the EBA in Albania in the late 1970s (PRENDI 1977–1978, 5–58). He considers this period as a moment that marks a turning point in the development of new traditions, new forms of economic activities, ways of life, and a new ethno-cultural context on the basis of which

the formation of ethnic identity of the Illyrians could be followed (PRENDI 1977–1978, 5). Ever since this first summary, Prendi and the other authors have reiterated these arguments by focusing on the archaeological aspects of the EBA that represented in the most tangible way the change. The exploration of many tumuli burials at Pazhok (ISLAMI – CEKA 1965), Piskovë (BODINAKU 1981), Dukat (BODINAKU 2002), Barç (ANDREA 1985), Cerujë (ANDREA 1997), Shkrel (JUBANI 1995), Shtoj (KOKA 1985; 2012), Çinamak (JUBANI 1971; 1989), Kënetë (JUBANI 1983), Bujan (ANDREA 1986; 1995), and Apollonia (AMORE 2010) documented the introduction of this novel burial custom during the EBA. Change has been also discussed as transformation of the material culture. The excavators of settlement sites such as Maliq (PRENDI 1966), Gajtan (JUBANI 1972), Nezir (ANDREA 1990), Shkodër (HOXHA 1987), Zagorë (ANDREA 1996), Tren (KORKUTI 1971), Sovjan (PRENDI – LERA – TOUCHAIS 1996), Bënjë (KORKUTI 1983; 2006), Katundas (KORKUTI 1986), Konispol (KORKUTI *et al.* 1996), Podgori (LERA 1983), Luaras (ALIU 2004, 14–16), Gorovec (PRENDI 1985), Dajç (BELA 1987), Pusi i Thatë (BELA 1992), Topojan (BUNGURI 1991), and others have all distinguished pottery fabrics, shapes, surface treatments and decorations that set the EBA apart as a period of profound transformations of the material culture. Change is seen also in terms of population movements associated with this period. Migration has been identified as major factor in explaining change (PRENDI 1977–1978; 1985; BODINAKU 1985; KORKUTI 1982; 2006; ANDREA 1990; PRENDI – BUNGURI 2008). Several discussions have also taken place on the nature and structure of settlements in the EBA (PRENDI – BUNGURI 2008, 15–23), as well as analysis of specific kinds of artifacts that connect Albanian communities of the EBA with the wider region of Southeastern Europe (ANDREA 2000; GOVEDARICA 2016). Recent exploration of the multi-layered settlement at Sovjan has contributed greatly to providing a sequence of absolute dates, and valuable information on the local landscape transformations together with data on the staple economy and use of domesticated animals (PRENDI – LERA – TOUCHAIS 1996; ALLEN 2002).

The goal of this article is not to review the evidence for the EBA in Albania in any systematic fashion, but rather to use the available data as a context of discussion for the contacts of local communities with northern contemporary cultures. The nature of these contacts and their role in the formation of the Early Bronze Age cultural characteristics are also explored, to the degree that the available data allow it. In order to do this, I will need to formulate some general observations on those areas of culture that have the potential to contribute to the construction of my arguments, namely the nature of EBA settlements, the elements of northern origin in the material culture, and the burials under tumuli. Instead, other relevant issues such as the shifts of subsistence practices and genetic flows that are currently not supported by good quality data will only be referred to indirectly.

### Early Bronze Age settlements

More than 20 settlement sites with EBA components (*Fig. 1*) are documented in Albania (PRENDI – BUNGURI 2008, 15). Eight more locations that have yielded EBA artifacts are also identified from surface surveys covering almost all the regions of the country. The sites are almost equally distributed between north and south Albania, however, tend to be mainly located along the main river valleys and the ecological niches that provide good subsistence resources and very efficient communication with neighbouring and distant communities. Korça Basin in the southeast and the lowland around the Shkodër Lake are two examples of these later locations. The Adriatic coast is also well represented in the sample, but the majority of sites are to be found along the valleys of Drin, Mat, Shkumbin, Devoll, Vjosë, and Osum rivers, which have always served as constant connecting routes of western coastal lowlands with the inland of the country.

As described elsewhere (PRENDI – BUNGURI 2008, 17), there are four main types of settlements based on their topographical location and the natural elements that condition their nature: open-air sites, hill-top sites, lake-shore pile dwellings, and caves. Hill-top sites dominate over the other site types with more than 50% of cases. Caves represent 30% of the sample, followed by open-air sites 15% and lake-shore dwellings 5%. The domination of hill-top sites could reflect a subsistence economy more oriented towards pastoral activities, but also the need of the community for more security and protection from potential attacks or raids. The structure of settlements in a particular area provides a more meaningful picture if given some time depth. It enables the clear view of trends, continuations, or changes that require explanations. For this reason, I give in *Fig. 2* a graphic representation of the main settlement types as distributed in the Early, Middle and Late Neolithic, as well as in the Chalcolithic time periods from Albania.

Even with some missing data, the graph illustrates clearly that the Early and Middle Neolithic models of settlement type distribution shows signs of change in the Late Neolithic when hill-top sites start to grow in number considerably if compared to the Early and Middle Neolithic, but not enough as to change dramatically the traditional structure of the Neolithic settlement. It is during the Chalcolithic (no distinctions in phases are possible at this moment) that the change takes place. Hill-top sites outnumber by little the open-air sites, even if represented at the same level as the cave sites. Lake-shore sites remain throughout a very small percentage of the sample. In this context, the view of the EBA sites seems to represent the consolidation of a trend that starts in the Late Neolithic and becomes apparent in the Chalcolithic.

The high number of cave sites that might be seasonally used, as showed by the case of Konispol Cave (KORKUTI *et al.* 1996, 193–195), points to a mobile or semi-mobile pastoral economy that could be reasonably combined with the more stable agricultural economy on seasonal basis (or used by particular segments of the community) by the inhabitants of the open-air lowland sites. There is no consistent information on the particular histories of the known EBA sites that would allow reasonable generalisations to be made. However, if we judge by the chronological components present in them, we can at least assess if each site has been settled in earlier periods and has continued to be used during the EBA, or has been settled anew during



*Fig. 1. Map of the sites of late Chalcolithic and EBA from Albania mentioned in the text*



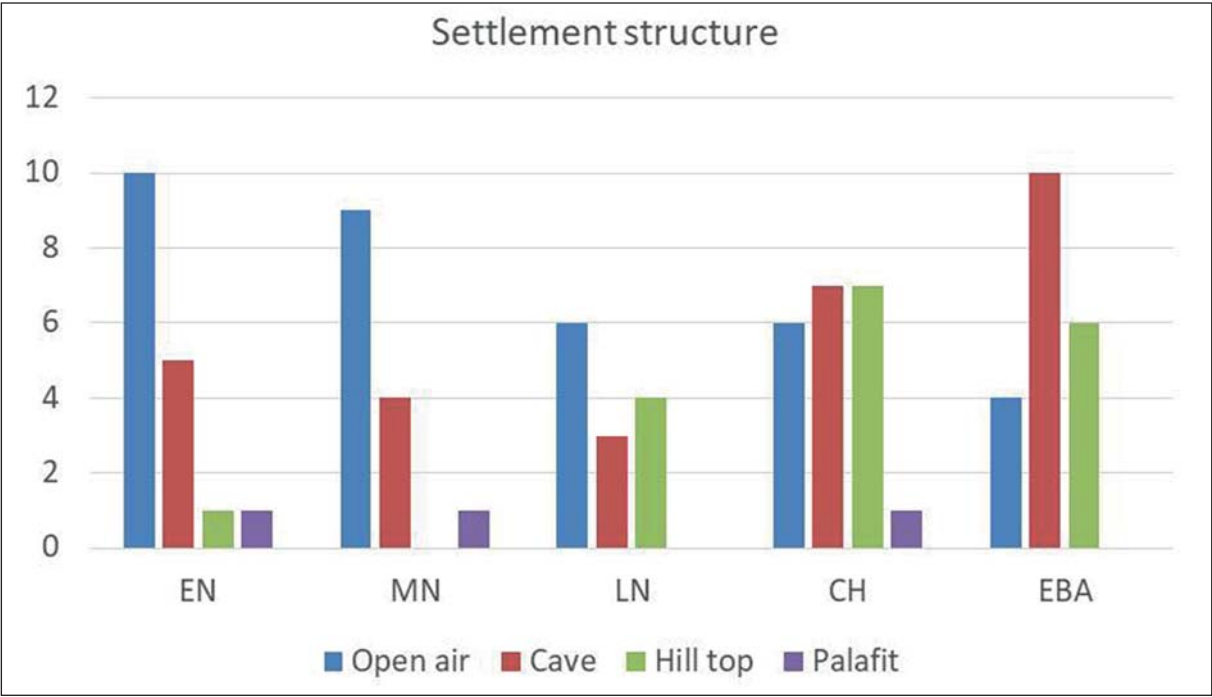


Fig. 2. Structure of prehistoric settlement types in Albania

this period. In other words, does the settlement pattern changes in a visible way by the foundation of new sites and the abandonment of the old? Following this criterion, the distribution of EBA sites in itself is quite informative, but if we include in the picture the site histories of the previous periods, we could potentially learn much more about regional trends and the real place of the EBA in the long-term cultural trajectory. The bar chart in Fig. 3 tries to summarize these data, where settlements are simply grouped into “old” (meaning sites with earlier chronological components) and “new” (meaning sites that start their life history with the EBA). The picture that appears is quite interesting.

Given that most of the settlements have been founded anew in the Early Neolithic (EN) by the farming communities, almost 85% of them are sites with no previous Mesolithic occupation. The Middle

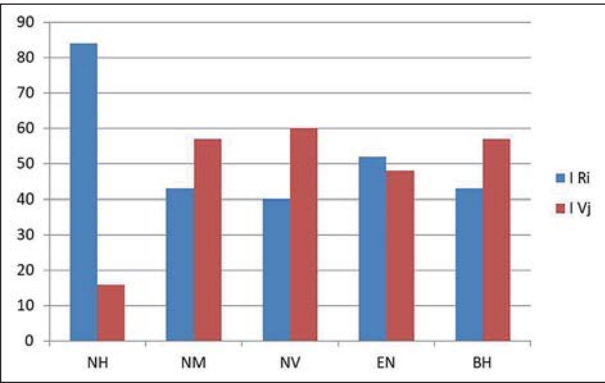


Fig. 3. Distribution of “old” (red) and “new” (blue) settlements per period. % is shown for Early, Middle and Late Neolithic, Chalcolithic and the Early Bronze Age

and Late Neolithic show the consolidation of most of the EN settlements. In fact, around 60% of the previous sites continue to be used, with the appearance of some “new” sites (in the range of 40% of the total). It is the Chalcolithic that reverses the situation, where for the first time since the Early Neolithic is seen that the majority of sites (even if only 52%) are newly founded and only 48% of the total is represented by the “old” settlements. In the EBA the situation goes back to “normal” again. Around 58% of sites are now “old” and only 42% of the total is represented by settlements with no previous history. If one is seeking change, from this single factor perspective, it is to be found in the

Chalcolithic, where a change in settlement pattern is visible. This observation is also confirmed by the previous discussion of settlement type even if that picture is similar but with slight differences.

### The tumuli burials

There are 24 tumuli burials from Albania that are assigned to the Early Bronze Age (map in *Figure 1*). As the map indicates the 24 tumuli are distributed in only 11 locations. More than half of the tumuli are to be found in the area of Shtoj and Shkrel on the eastern shores of Lake Shkodër. The eleven locations of the tumuli are almost equally distributed between northern and southern Albania, however, if those in the south cover most of the micro-regions, the burials in the north are essentially concentrated to the northwest and the northeast of the country, leaving large portions of northern Albania untouched by this cultural phenomenon (at least as known until now). It is not the place here to describe in detail the individual tumuli burials, since this was done on several occasions before (BODINAKU 1985; 1999; PRENDI – BUNGURI 2008, 28–62), however, the exploration of the variability of customs, rituals, architecture, and material culture will help understand the context of appearance of the tumuli in the southern Adriatic and identify potential connections with the steppe Yamnaya culture.

The only absolute dates that are reported from the Albanian EBA burials come from tumulus X at Apollonia (AMORE 2010, 331). They come from two bone fragments of the individual interred in the central grave (Grave 60) and fall in the first half of the 3<sup>rd</sup> millennium BC (2852–2505 and 2580–2475 cal BC 2σ). From a thorough discussion of the available absolute dates of the EBA burials from the southern Adriatic, Govedarica argues that the pit graves of Apollonia, Shtoj Tumulus 6, Piskovë, Pazhok and Dukat could belong to the early centuries of the 3<sup>rd</sup> millennium BC (GOVEDARICA 2016, 23–24). The consequence of this discussion is that the early emergence of the tumuli burials in Albania could potentially pre-date by two or more centuries the EBA levels at Maliq and Sovjan that currently fall between 2500–2000 BC (PRENDI – LERA – TOUCHAIS 1996; GORI 2015, 187–193).

Almost all of the EBA burials under tumuli represent single burials. Exceptions are those at Pazhok, Shtoj and Çinamak in which two individuals are disposed of. In Bujan and Shtoj tumuli with no burials but only remains of rituals are identified. Inhumation is the dominant burial ritual documented in this group of tumuli. However, cremation is used in some of the northern Albanian tumuli such as at Shtoj, Shkrel and Çinamak. Here, both rituals are used. In the inhumation burials the body is placed in supine position with flexed legs that have subsequently collapsed on one side (such as at Piskovë, Pazhok, Apollonia, *Fig. 4*) or in crouched position as in the case of Dukat or Shtoj Tumulus 6.

Deep pit graves, dug into the virgin soil are documented in Piskovë, Pazhok, Dukat, and Cerujë. Not very deep pits are documented instead at Apollonia and Shtoj. Stone circles are carefully built around the central burials at Pazhok (*Fig. 5*), Cerujë and Piskovë, but nowhere else. These circles are interrupted at some point, allowing for a narrow corridor to provide entrance to the funerary area. Slab cists and urns are also used in the northern tumuli. At Shtoj Tumulus 6 both grave types are found, in a unique stratigraphical position with the central burial being a pit-grave (associated with six violin-shaped terracotta figurines) and above it a slab cist grave (associated with classical Cetina culture material). The covering of the central burials and of their stone features is mainly done with soil in southern tumuli, while stones of different sizes are used predominantly in the north.

Several other ritual observations are also made from the EBA tumuli. They include use of pottery fragments and flint arrowheads in the fill of the graves or the cover of the original tumulus. Animal bones are usually identified either in the grave or otherwise in the fill of the tumuli. At Piskovë, the floor



*Fig. 4. View of the central burial at Tumulus X in Apollonia (after AMORE 2010)*



*Fig. 5. The central burial at the tumulus of Pazhok (after BODINAKU 1999)*



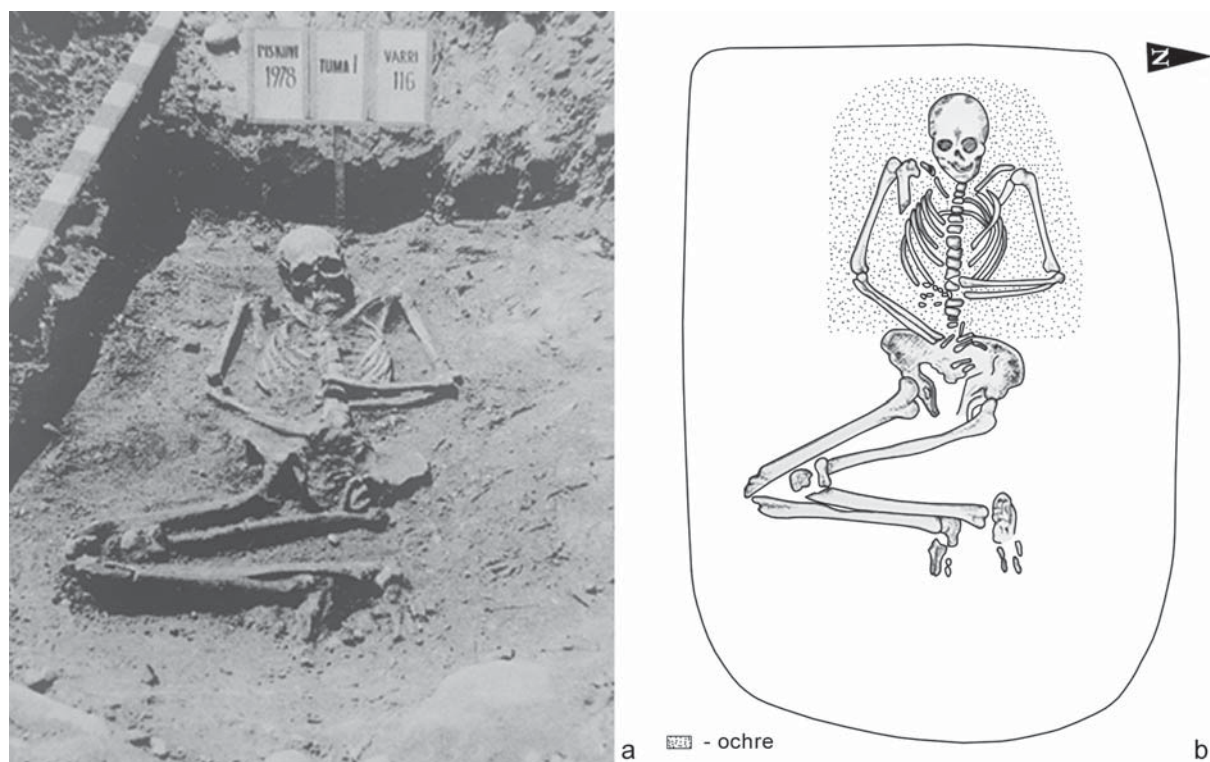


Fig. 6. The central burial at the tumulus of Piskovë (a. photo; and b. drawing; after BODINAKU 1999)

of the pit-grave and the upper body of the deceased is coloured with red ochre (Fig. 6). Ritual platforms with offerings and the arrangement of grave floors with pebbles are also documented in several cases.

When the data from the EBA tumuli burials are considered together emerges a picture that compares well with what happens elsewhere in the western and southern Balkans. The adoption of the tumuli at the very beginning of the EBA in Albania is a fascinating issue to examine. The idea that one should look at some sort of influence from the Yamnaya culture in Northwestern Balkans has always been around and remains a valid explanation. PRENDI (1977–1978), PRENDI – BUNGURI (2008), KORKUTI (1982; 2006), ANDREA (1985; 1990) and BODINAKU (1985; 1999) all see the migrations of people from the Yamnaya culture area to a greater or lesser degree as playing an important role in introducing this new burial ritual to the area. They agree, however, that the physical presence of these newcomers is quite limited since the wider cultural complex of the EBA remains well rooted in the local Chalcolithic tradition. GOVEDARICA instead (1989; 2016) argues that there is not enough archaeological evidence to support the idea that intensive communications existed between southern Adriatic and the steppe Yamnaya culture area. Yamnaya communities migrated only to steppe-like areas of Pannonia and the coast of the Black Sea. Adoption of tumuli is considered as an inspiration transmitted here from the indigenous eastern Balkans communities through well-established regional network (GOVEDARICA 2016, 25).

In fact, the reality of the local cultural context where tumuli emerge for the first time in the EBA is very complex. Several features such as the use of the deep pit-graves, the position of the body in the grave, the use of red ochre, or the use of some items of material culture as grave offerings (such as the flint arrowheads at Piskovë, or the golden hair rings from Tumulus 10 at Shtoj), indicate a direct influence from the steppe Yamnaya culture. Most of the other features documented for the construction of the tumuli, the graves, rituals and the vast majority of the material culture used in the burial contexts



point to local developments and the direct influences of the Ljubljana (central graves at Shtoj Tumulus 6 and the later grave at Pazhok) and Cetina (for example the slab cist grave 14 at Shtoj Tumulus 6) cultures of the central Adriatic, as well as of the Mediterranean world (see for instance the discussion on the violin-shaped terracotta figurines from Shtoj and Apollonia in GOVEDARICA 2016). In order to further this argument, I turn now to the discussion of those elements of material culture that could be identified as having “northern steppe origin” among the local cultural contexts.

### Material culture items of “non-local origin”

Change in material culture is indicated as the most obvious change visible archaeologically in all sites with an EBA component. When describing the cultural elements of phase IIIa at Maliq, Frano Prendi observes that this EBA layer overlays without any hiatus the late Chalcolithic level and is very easily distinguishable from the preceding phase because of the very different ceramic assemblage (PRENDI 1966, 266–267). Similar observations appear also in the reports of the other regionally important EBA sites at Nezir (ANDREA 1990, 6–7), Gajtan (JUBANI 1972, 377–379), Shkodër (HOXHA 1987, 72–75), Dajç (BELA 1987, 238–239). The pottery appears to be predominantly of coarse ware, quite distinct from the fine ware of the late Chalcolithic. Surface treatments, shapes and decorations change dramatically from the preceding phase, even if some limited elements continue from the late Chalcolithic to the EBA. Recently, GORI (2015, 189) has argued for the existence of at least two chronological gaps in the sequence of Maliq, one of them being precisely the transition from Late Chalcolithic (Maliq IIb) to the Early Bronze Age (Maliq IIIa). Her argument is based on the comparisons of material between Maliq and the nearby site of Sovjan, excavated recently in a better documented fashion and providing absolute dates from secure contexts. If Gori is right, the stratigraphical continuity as narrated by Prendi might require correction, however, for the purpose of our grouping of EBA sites into the categories of “old” and “new” not much changes, since Maliq and other sites have been occupied for many centuries before the emergence of the EBA (even if with temporary interruptions). The explanation of material cultural change remains an intriguing question, even if long debated. Internal structural change of local communities, or external influences of some kind have both been thrown on the table and, in this context, the identification of specific artifacts types of foreign origin and their place within the cultural assemblages gains a particular importance. I am listing here briefly types such as the corded ware (BODINAKU 1985, 182–183; BULATOVIĆ 2014, 122–130), the silver hair rings (KOKA 1985), the violin-shaped terracotta figurines (GOVEDARICA 2016), and a group of pottery finds mainly from Maliq and Nezir selected by Zhaneta ANDREA (2000, 119–127).

In assessing the importance of the objects of steppe origin among the late Chalcolithic assemblages in Albania, Bodinaku mentions the long flint knives of the Chalcolithic phase Maliq-Kamnik together with the two examples of corded ware from the layers of the same period at Tren and Gajtan (BODINAKU 1985, 182–183). He also underlines what seems obvious, that these objects represent very rare cases and a very limited distribution among the known late Chalcolithic sites. A more careful study of the corded ware phenomenon in the local contexts, however, shows that few sherds appear also in other sites, such as the cave of Bënjë (KORKUTI 1985, 57–58, 82 Tab. V, 16), Tren (KORKUTI 1985, 57–58, 82 Tab. V, 9), Nezir (ANDREA 1990), Gajtan (JUBANI 1972; KORKUTI 1985, 57–58, 82, Tab. V, 18), Ganjollë (LAHI 1988, 257–258), and in the fill of the tumulus at Bardhoc (HOTI 1982, 33, Tab. X, 6). The map in *Fig. 7* shows a wider distribution of sites with corded ware along major river valleys and communication routes that connect northeast, northwest, and southeast Albania with communities in

central and western Balkans, where the same phenomenon is well documented (see the recent discussion of BULATOVIĆ 2014, 101–143).

Seven silver hair rings from the context of grave 3 of Tumulus 10 at Shtoj (KOKA 2012, Pl. 39, 2–8) make a separate category of artifacts that finds the closest parallels in the Yamnaya graves of the Balkans. This category remains a unique find in Northwestern Albania in burials with rituals that show similarities with those of the Yamnaya culture, but not further south.

Several violin-shape terracotta figurines are discovered from burial contexts at Shtoj, Tumulus 6 (KOKA 2012) and Apollonia (AMORE 2010), but also from the settlement at Maliq (PRENDI 1966, Tab. X, a). These finds are well dated in the first half of the 3<sup>rd</sup> millennium BC and show clear similarities with the examples from the Cyclades and Asia Minor (for a detailed discussion see GOVEDARICA 2016).

The last group of finds to be mentioned here is made of several examples from Maliq and Nezir that ANDREA (2000, 119–127) had characterised as showing clear influences from central Balkans groups of late Chalcolithic of Baden, Coțofeni and Kostolac (*Fig. 8*). GORI (2015, 190–191) has questioned the relevance of the long distance comparisons made by Andrea and argues that the decoration motifs of this group of pottery is commonly found in the nearby sites of western and central Macedonia, as well as Sovjan, and could reflect the regional exchange networks of the southern-central Balkans more than long-distance exchange with Baden, Coțofeni or Kostolac groups. She has also underlined a substantial chronological discrepancy that makes improbable this later comparison (GORI 2015, 191). The discussions on this specific group of pottery from Maliq and Nezir, however, indicate that many Albanian EBA communities are actively engaged in regional exchange networks that include wide areas in the western, central and southern Balkans (as is the case with several Ljubljana and Cetina culture connections from Pazhok, Shtoj, Shkrel, Shkodër, and Nezir, among others).

When all these groups of evidence are considered together, several points emerge. Together they represent a very small portion of the material culture documented in the late Chalcolithic and EBA sites in Albania, dominated by a strong local character. They do indicate the existence of direct or indirect connections with the steppe Yamnaya culture groups. None of the existing evidence touched



*Fig. 7. Map of locations of finds of non-local origin mentioned in the text*

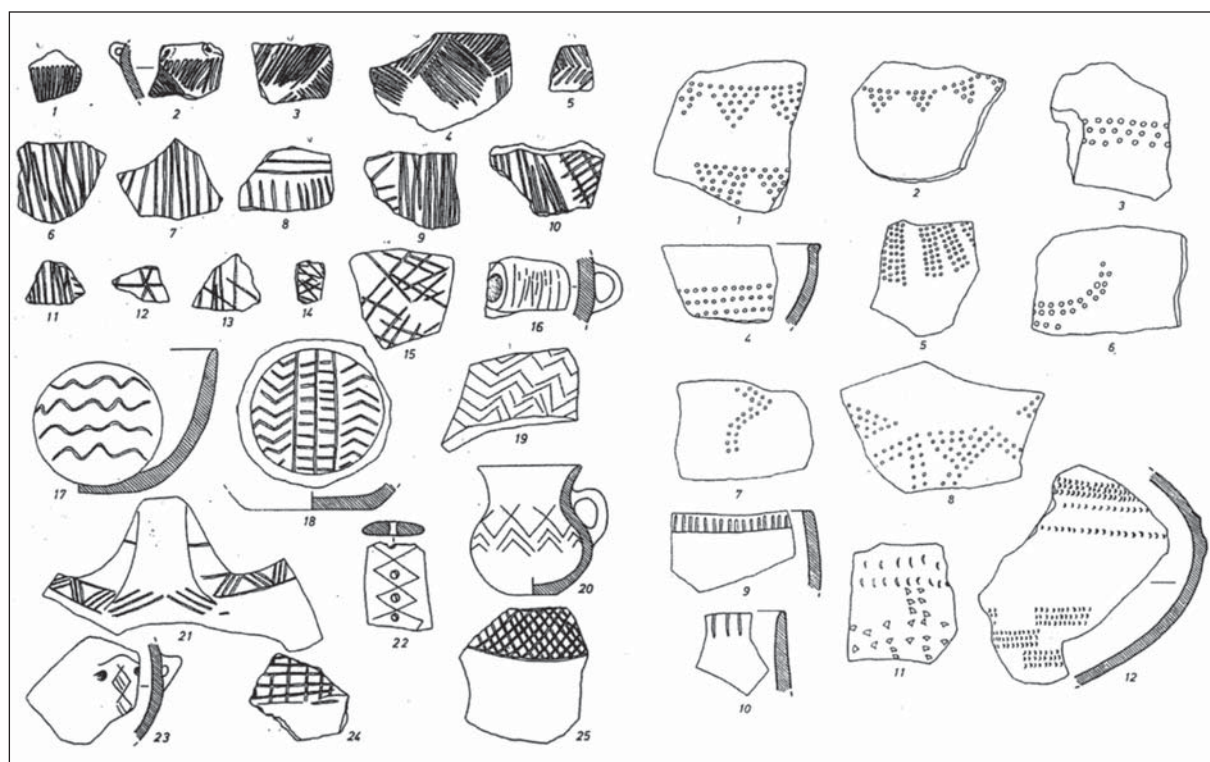


Fig. 8. Finds of non-local origin from different late Chalcolithic and EBA Albanian sites

upon briefly here can support the idea of the physical presence of steppe Yamnaya culture people in the area at the capacity of carrying agency of these cultural elements in the local contexts.

## Discussion

Based on the evidence from settlement patterns, burial customs and the external influences on specific groups of material culture, several points emerge as important:

- Cultural changes during the first half of the 3<sup>rd</sup> millennium BC in the territory of Albania are part of similar trends in the neighbouring regions of the southern Balkans. In fact, they can be better understood and even explained if considered in the wider regional context;
- In the long tradition of Albanian prehistoric studies, the EBA has been identified as the period of deep transformations of multiple areas of culture. Several studies, however, see the beginnings of some timid changes in the preceding late Chalcolithic period (BODINAKU 1985, 181–183; KORKUTI 1985). The evidence summarized here (for instance the settlement pattern change shown in Fig. 2, 3 above) suggests that the late Chalcolithic period is the crucial turning point in the local cultural trajectory and should gain much more weight in the arguments of cultural change in later prehistory in the country;
- Identification of the mechanisms of cultural change is important in understanding the whole picture. They seem to be multiple and able to operate at different levels in different geographical areas. Networks of exchange between communities at local and regional levels seem to be the most active agencies that bring about change, spread successful ideas and innovations



(for instance pottery styles and economic activities such as pastoralism and use of secondary products). Competition and emulation between and among individuals and communities could also be responsible for the spread of novel human behaviours (such as the burial under tumuli). Movement of people might not be completely excluded from the picture, but in any case, they have been very circumscribed and very limited in number and intensity as a factor for cultural change;

- Overall, we can speak of adoption of new cultural features within the dominantly local culture, rather than introduction by successful foreign individuals. These later migrants, if they are so, are difficult to identify archaeologically. No context described so far by long time discoveries and explorations of the late Chalcolithic and EBA in Albania could be singled out as typical steppe Yamnaya culture. Instead, they are mainly a combination of local features with one or few foreign elements. An exception might be represented by the individual of the central grave of the tumulus at Piskovë, where the deep pit cut under the ground level is associated with body treatments (supine position with flexed legs, spraying of red ochre on the upper half of the body and the grave floor) that are very typical for the steppe Yamnaya culture. Traditional physical anthropological analyses have defined this individual as different from the local population (DHIMA 1985 identifies the individuals of the central burials at Piskovë and Dukat as *protoeuropoid*, characteristic to the north-Pontic steppe population or those of the Lower Danube area). It is expected that the near future would provide additional lines of enquiry and information, including aDNA, that might help diversify further our data and potentially understand better the nature of genetic relationships between these potentially foreign individuals and the local population. This complex issue is not expected to be clarified by any single approach (even the aDNA analysis), however, the contemporary techniques of enquiry could provide opportunities for renewed interest and discussions on the character of the cultural changes of the 3<sup>rd</sup> millennium BC in Southeastern Europe.

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# Yamnaya interactions in the Carpathian Basin

JÁNOS DANI – GABRIELLA KULCSÁR

## Abstract

*The transformation from Late Copper to Early Bronze Age societies in the Carpathian Basin, from the final 4<sup>th</sup> to the mid-3<sup>rd</sup> millennium BC, and the roles of ‘locals’ (autochthonous groups) and ‘newcomers’, remains controversial. The issue of continuity and discontinuity at the transition from the Late Copper Age to the Early Bronze Age in this region received fairly little attention for a long time, and has regained the interest of scholars only in the past decade. The aim of this paper is to remedy this problem, and to make an attempt to summarize some aspects of this transition in a number of regions of the Carpathian Basin as well as to provide a framework for more detailed discussions that will follow. A few well-known case studies will be examined that exemplify the importance of interregional interaction at the beginning of the Early Bronze Age in the Carpathian Basin and the immediately surrounding regions. No doubt the decisive element in this transformation was the appearance of Yamnaya communities in the central and eastern part of the Carpathian Basin. It is quite clear that the earliest kurgan burials in the Great Hungarian Plain can be dated to the later 4<sup>th</sup> millennium BC, which corresponds to the pre-Yamnaya and not the Yamnaya period. The simple burials, usually without any grave goods, suggest that this population arrived to the Great Hungarian Plain from the northern Pontic region. The number of kurgan burials increased during the earlier 3<sup>rd</sup> millennium BC. Despite the modest grave furniture, the finds and the burial rite clearly indicate that these burials can be linked to the steppe region. The few artefact types, placed as grave goods, would suggest that the interaction network emerging between the steppe and certain regions of the Carpathian Basin at the turn of the 4<sup>th</sup>–3<sup>rd</sup> millennium BC is reflected in the artefacts accompanying similar customs and innovations. The contact between the two regions was not unidirectional, but one characterised by a dynamic interaction.*

**Key words:** Yamnaya impact, metallurgy, bioarchaeology, horses, environmental landscape, symbolic/mental landscape, Late Copper Age, Early Bronze Age

## Introduction

Seeing how remarkable big earthen tumuli (kurgans) are on the flat Great Hungarian Plain, they have been capturing people’s imagination for centuries. Hence archaeological research in the Carpathian Basin has begun already in the “golden age” of archaeology in the mid-19<sup>th</sup> century and continues to this day (for a detailed history of research see KALICZ 1968, 16–61; ECSÉDY 1979; DANI 2011; DANI – HORVÁTH 2012, 17–19; HORVÁTH *et al.* 2013; DANI 2020, 1–3; KÖRÖSFÖI 2020). In the eastern part of the Carpathian Basin, in eastern Hungary (most of all east of the Tisza River), and in a large, non-contiguous area in Romania, northern Bulgaria and Serbia large numbers of burial mounds (kurgans) appeared at the end of the Copper Age with ‘Pre-Yamnaya’<sup>1</sup> or Yamnaya (Pit-Grave) type material, which is usually

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<sup>1</sup> “Pre-Yamnaya” phrase means that we are talking about archaeological material from the 4<sup>th</sup> millennium BC showing East European connections, that predates the Yamnaya impact (i.e. before *ca.* 3100 BC in the case of the Carpathian Basin).



ascribed to the “Kurganisation process” (DANI 2020, 7–8, Fig. 8) starting in the eastern, steppic region (Fig. 1).

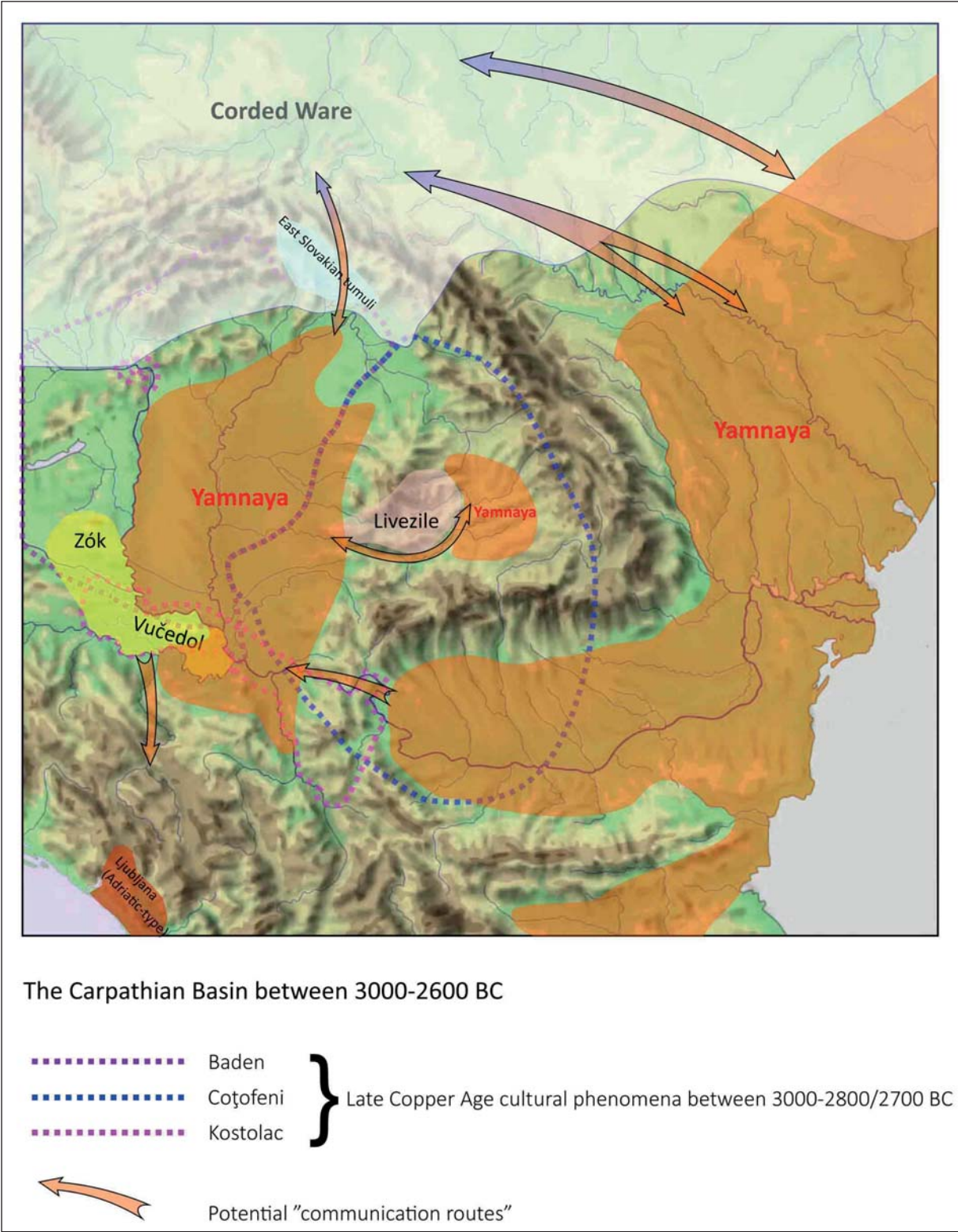


Fig. 1. Cultural and chronological setting of the Carpathian Basin in the first half of the 3<sup>rd</sup> millennium BC

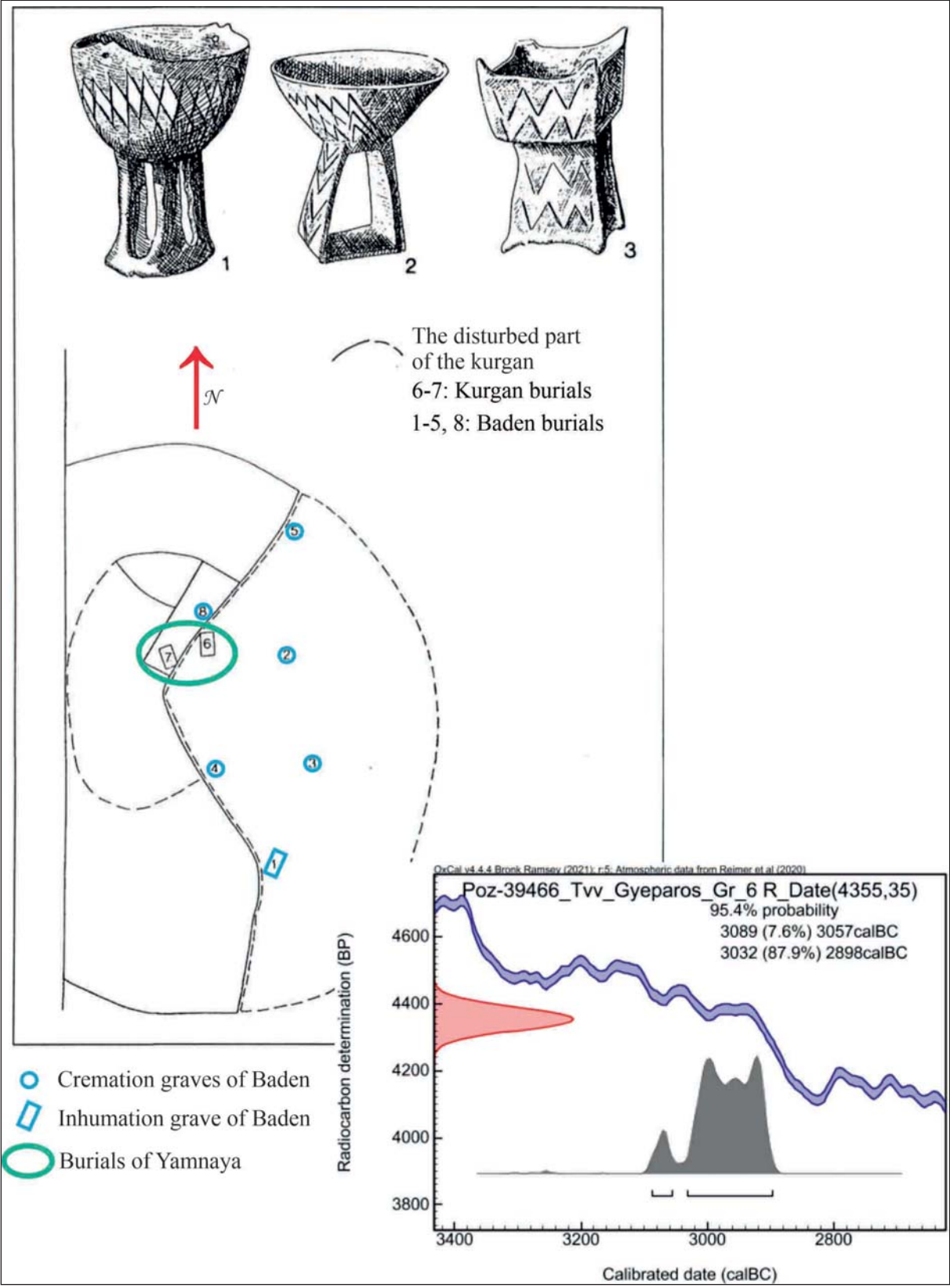


Fig. 2. Late Copper Age (Baden) and Yamnaya burials under Tiszavasvári-Gyepáros kurgan (modified after KALICZ 1999, Fig. 17)



Fig. 3. The central grave of Hortobágy-Ohat, Duna mound excavated by Lajos Zoltai (after original drawing by L. Zoltai made at the site and made in the inventory book of the Déri Museum, Debrecen)

Although generations of archaeologists have found remote connections (mainly stratigraphical) between the local Baden and the incoming Yamnaya groups (e.g. Mezőcsát-Hörcsögös-halom and Tiszavasvári-Gyepáros-halom [Fig. 2]), for example Baden biritual cemetery under a kurgan (Ohat-Dunahalom [Fig. 3] and Hajdúnánás-Zagolya), Yamnaya kurgan built on top of a Baden settlement (Tiszaeszlár-Potyhalom), Baden cremation grave as secondary burial in a Yamnaya kurgan, etc. (FRÎNCULEASA – PREDA – HEYD 2015, 75–78; DANI 2020, 4–5), we do not yet know the exact nature of the relationship between these two cultural phenomena: did Baden and Yamnaya cultures live symbiotically together, possibly side by side, with more or less peaceful assimilation processes? Or are we dealing instead with a (sometimes violent) acculturation? Anyway, the fact that we can observe stratigraphical and cultural superposition (and diachrony) in several cases strongly hints at intentional overlapping.

### Cultural and chronological framework

In brief, the Late Copper Age (4<sup>th</sup> millennium BC) of the Carpathian Basin is characterised by the emergence of the so-called “Baden phenomenon” and of Coţofeni-type material from the cooler climate of Transylvania with their characteristic pottery style, biritual burial rite, settlement types, etc. (M. VIRÁG 2003, 124: Map 3, 127, 129, 133–136; FURHOLT 2008, 22; HORVÁTH 2012, 55–58; HORVÁTH – SVINGOR 2015; BONDÁR 2018, 10; and ROMAN 1976; CIUGUDEAN 2000; POPA 2016, Fig. 18). The earliest Yamnaya groups from the Pontic steppe region first came into contact with these groups in the Carpathian Basin (HORVÁTH 2012, 58; DANI 2020, 4–5). At the same time, this period in the European Prehistory can also be described as a time of great innovations and transformation, which certainly adds to the complexity of the processes taking place (HANSEN 2014; HEYD 2019, 125–128). The last important group of Late Copper Age material – which provides already a transition to the Early Bronze Age – is labelled after the eponymous site of Vučedol near Vukovar and has a distribution area mostly in northeastern Croatia – Syrmia and eastern Slavonia – in its early phase (MILOGLAV 2018).



The beginning of the Bronze Age (approximately around 2600 BC) in the central part of the Carpathian Basin can be sketched along two lines. If we simplify a rather complicated situation we may say that in southern Transdanubia, Slavonia and Syrmia late Vučedol and then Somogyvár–Vinkovci-type materials are found. Most of the Great Hungarian Plain, northern Transdanubia and southwest Slovakia are characterised by Makó–Kosihy–Čaka-type finds (KULCSÁR 2009; KULCSÁR – SZEVERÉNYI 2013) (*Fig. 1*).

With regard to the issue of the transition from Late Copper Age to Early Bronze Age, the case of sites with Vučedol style material has been usually seen as unproblematic, since there is an obviously continuous development between the early and later phases in terms of material culture and settlement structure as well (KULCSÁR 2013). The distribution of Somogyvár–Vinkovci style material appears to overlap to some extent with that of Vučedol style material, and seems to be later in most cases, although most sites that yielded both material groups remain unpublished. Here stylistic continuity is less apparent, although it does exist to some extent.

In the western part of Transylvania, Late Copper Age Coțofeni style material develops smoothly into the Early Bronze Age Livezile group (CIUGUDEAN 1996; 2000; 2011). At the same time in southeastern Transylvania, the transitional process from Late Copper Age to Early Bronze Age is rather complicated and problematic to the Schneckenberg culture with the presence of Globular Amphorae Culture, Zăbala and Zimnicea-type discoveries (SZÉKELY 1997; 2002a; 2002b; 2009, 39–40; CIUGUDEAN 2015; SZÁSZ 2020, 39–41). In the other areas of the Carpathian Basin no stylistic continuity has been observed between Late Baden and Kostolac on the one hand and Makó–Kosihy–Čaka and Somogyvár–Vinkovci on the other. In the period 2800–2600 BC we observe a process of transformation (a “Transitional Period”)

cal BC	Central Europe	Hungary	Western Hungary	Danube region	Eastern Hungary
1500/1450	RB B	MBA 3	Encrusted Pottery Gáta–Wieselburg II	Vatya	Füzesabony- Gyulavarsánd/ Otomani Hatvan Maros
	RB A2	MBA 2			
		MBA 1			
2000/1900	RB A1	EBA 3	Kisapostag Gáta–Wieselburg I	Late Nagyrév Kisapostag	Late Nagyrév Hatvan Nyírség/Szaniszló Otomani I Maros
2200/2100					
2300/2200					
2500/2400	RB Ao	EBA 2a-b	Late Somogyvár/Proto Kisapostag Somogyvár–Vinkovci	Bell Beaker Late Makó Proto and Early Nagyrév	Late Makó Nyírség Early Nagyrév Early Maros
	Eneolithic	EBA 1	Late Vučedol/Early Somogyvár–Vinkovci	Makó	Makó Yamnaya
2900/2800	Late Copper Age	Late Copper Age	Vučedol, Kostolac Late Baden	Vučedol Late Baden, Kostolac	Late Baden, Yamnaya, Early Makó
			Baden	Baden	Baden Pre-Yamnaya
3500/3400					

*Fig. 4. Relative chronological framework of the Carpathian Basin in comparison with Central Europe from the Late Copper Age to Middle Bronze Age (after P. FISCHL et al. 2015, Fig. 1b)*



that is still poorly understood (HORVÁTH 2012, 1, 43, 63; KULCSÁR 2013; KULCSÁR – SZEVEÉNYI 2013; HEYD 2016, 62–79; HORVÁTH 2016; SZABÓ 2017, 100–102, 104–105, 108, Fig. 5; REMÉNYI 2018, 48–50; DANI 2020, 8–10). It has to be emphasised, however, that due to the traditional culture concept, no-one has actually looked for such stylistic and typological connections, since the beginning of the Bronze Age was accepted to be marked by large population movements, mostly from the Balkans. This view, however, has to be questioned in the light of new chronological data (KULCSÁR – SZEVEÉNYI 2013; P. FISCHL *et al.* 2015; KISS *et al.* 2019) (Fig. 4).

The Carpathian Basin is in a key position to assess the processes that shaped the European Bronze Age and the new absolute chronological outline – even with its uncertainties and with its confusing and conflicting national terminologies – compels us to rethink the processes of transition from the Late Copper Age to the Early Bronze Age (HEYD 2013, 41–43, Fig. 22). Previously held opinions about a clean-cut division of the two periods and their material culture do not seem to hold up against new evidence.

## Metallurgy

For a long time, the late 4<sup>th</sup> millennium BC was seen as a period of diminished metallurgical activity due to various reasons (e.g., political upheavals due to migrations or the lack of easily accessible native copper, or perhaps because the meaning of prestige has shifted from metals to other goods) (RACZKY 2000, 30; M. VIRÁG 2003, 132; HEYD – WALKER 2014, 677; BONDÁR 2016, 109–110; 2019; 2021, 9–11). This ‘metal poverty’ of the Baden period has often been contrasted with the new rapid development of metallurgy in the early 3<sup>rd</sup> millennium BC, characterised by innovations such as the bivalve and tripartite moulds (ECSEDY 1995; BERTEMES – HEYD 2002, 216–218; DANI 2013, 205–217, Fig. 6; KULCSÁR – SZEVEÉNYI 2013, 79–81; HEYD – WALKER 2014, 678). Recently, however, it has been suggested that some products of metallurgy, especially Bányabükk-, Fajsz- and Kömlőd–Kozarac-type shaft-hole axes can be dated to a period preceding the Early Bronze Age as traditionally defined (HANSEN 2011, 142–144; DANI 2013, 203–204, 218, Fig. 10; SZEVEÉNYI 2013, 666). The manufacture of these and related axes continues uninterrupted in the Early Bronze Age, indicating continuity in metallurgical production. The consumption of such axes in hoards – often as depositions of single items – is a pattern that will become a major characteristic of the European Bronze Age. In terms of interregional interaction, the example of copper shaft-hole axes demonstrates not only the spread of a new type of metal weapon or tool, but beyond it also of a technological innovation and a social process (specialisation of craftsmen) (BÁTORA 2002; 2003; DANI 2013, 203–204, 217; KULCSÁR – SZEVEÉNYI 2013, 80; KAISER 2019, 178–190, 233–243; DANI – SZEVEÉNYI 2021 in press, 265–268). These objects were already cast in bivalve moulds, providing much greater control over the shape of the finished product and the process of casting. The first representatives of such shaft-hole axes in the Carpathian Basin are the Bányabükk/Vâlcele-type axes (Fig. 5).

These massive, single-edged, axes belong to a type that first appears in the Caucasus in the mid-4<sup>th</sup> millennium BC, mostly in richly furnished burial mounds with Maykop-style material (HANSEN 2009, 145–149; SZEVEÉNYI 2013; KAISER 2019, 233–234), but at the same time, they are known (under the name of “Samarskaya or Samara-type”) from Pre-Yamnaya (so called “post-Mariupol”) barrow graves of the Middle Upper and Lower Dniepr Region, as well (KLOCHKO 2001, 68–70, Fig. 23; KLOCHKO *et al.* 2020, 40–41, 60–62, Fig. 17–18, 31/a–b). The westernmost part of their distribution area is in the eastern part of the Carpathian Basin with outliers from Croatia and Albania. The date of the examples from the Caucasus, southern Russia, and Ukraine would indicate an earlier, pre-Bronze Age timespan



Fig. 5. The last 3 pieces of the Bányabükk/Válcele hoard from the Márton Roska Collection of the Debrecen University (photo by I. Czinegéné Kiss, courtesy of P. Forisek, Debrecen University)

in the second half of the 4<sup>th</sup> millennium BC. On the other hand, based on well-dated examples from Russian kurgan burials according to E. Kaiser, the Bányabükk- and Fajsz-type early shaft-hole axes cannot be dated earlier than 3000 BC in the Carpathian Basin (KAISER 2019, 236–238, Tab. 10). Yet it seems certain, on the basis of the East-European (Russian and Ukrainian) grave assemblages, that these early types of shaft-hole axes were in use from the “Pre-Yamnaya” (from the 2<sup>nd</sup> half of the 4<sup>th</sup> millennium BC), then continued their production and use in the Yamnaya period (KLOCHKO 2001, 78–83, Fig. 27–28; KLOCHKO *et al.* 2020, 50–53, 145–148, Fig. 19–23) and forming the starting point of the long-lasting tradition of the use of copper and later bronze shaft-hole axes throughout the Early and Middle Bronze Age (DANI 2013, 210–217; KULCSÁR – SZEVEÉNYI 2013, 81). The main problem of dating is that a significant part of the Carpathian Basin specimens was found as stray finds or as part of a hoard that is difficult, or even impossible to date (SZEVEÉNYI 2013, 663–664). Examining the context of these axes from the Caucasus and southern Russia they are usually found in burial contexts, mostly furnishing the graves of rich males (KAISER 2019), while in the Carpathian Basin they are mostly “stray finds” – probably “hoards” or deliberate depositions containing a single item – or, in the case of Bányabükk itself, parts of larger hoards that contain a single type of object. While the social and symbolic meanings attached to these axes may not have differed greatly in these areas, the differences in context and deposition indicate a reinterpretation of the object type according to local cultural logic (SZEVEÉNYI 2013, 664–667). The further development of this object class (as weapon, tool and prestige item) in the 3<sup>rd</sup> millennium BC deserves a brief mention, since these are the most significant metallurgical products of Eastern and Central Europe in the Early Bronze Age. After the initial introduction of the form, a large variety of axes began to be produced in the Carpathian Basin and the northern Balkans

(DANI 2013, Fig. 10). Clear evidence of local production in the Carpathian Basin is attested by the presence of moulds and special find assemblages (as for example the special deposition of moulds from the Makó site of Üllő 5) in larger settlements (KÓVÁRI – PATAY 2005; DANI 2013, 217, Fig. 6, Appendix 6). To sum up, the date of the first appearance of the early shaft-hole axes in the Carpathian Basin will remain a matter of debate as long as we have not found a well-datable example.

During the consolidation phase that followed the expansion of the first Yamnaya groups, between 2900 and 2700 BC, “out of the ordinary” burials furnished with precious metal jewellery (most of all with hair rings) and copper or precious metal weapons (daggers and tiny shaft-hole axes/hammer axes) appear in the Carpathian Basin and beyond: Kalvarienberg-Neusiedel am See/Nezsider (from Burgenland, Eastern Austria) (RUTTKAY 2002; 2003); Sárrétudvari-Örhalom kurgan (Hajdú-Bihar County, Eastern Hungary) (DANI – NEPPER 2006); Dusnok-Garáb mound (next to the left bank of the Danube, Central Hungary) (DANI – LANTOS – ANDRÁSI in prep.); Mala Gruda, Velika Gruda, Gruda Boljevica, Mogila na Rake, Kujava, Rubeža (the region around the Kotor bay, all from Montenegro) (PRIMAS 1996; GOVEDARICA 2018; DANI – LANTOS – ANDRÁSI in prep.; DANI – PREDÁ-BĂLĂNICĂ – ANGI 2021, in press). While grave 4 from Sárrétudvari-Örhalom kurgan contained an amphora-like vessel (similar to the ones from the Budzhak variant of the Yamnaya) and a pair of hair rings made of silver and electrum, grave 7–7a, which belonged to a mature man, was furnished with an amphora similar to the one mentioned previously, two massive spiral hair rings (one made of silver, the other of electrum), a special copper pick-axe with beechwood handle, and a rare form of dagger. Both weapons are foreign types: the axe was considered as a variant of the so-called Eschollbrücken-type, whose main distribution area is in Central and Western Europe, and the exemplar from Sárrétudvari can be one of

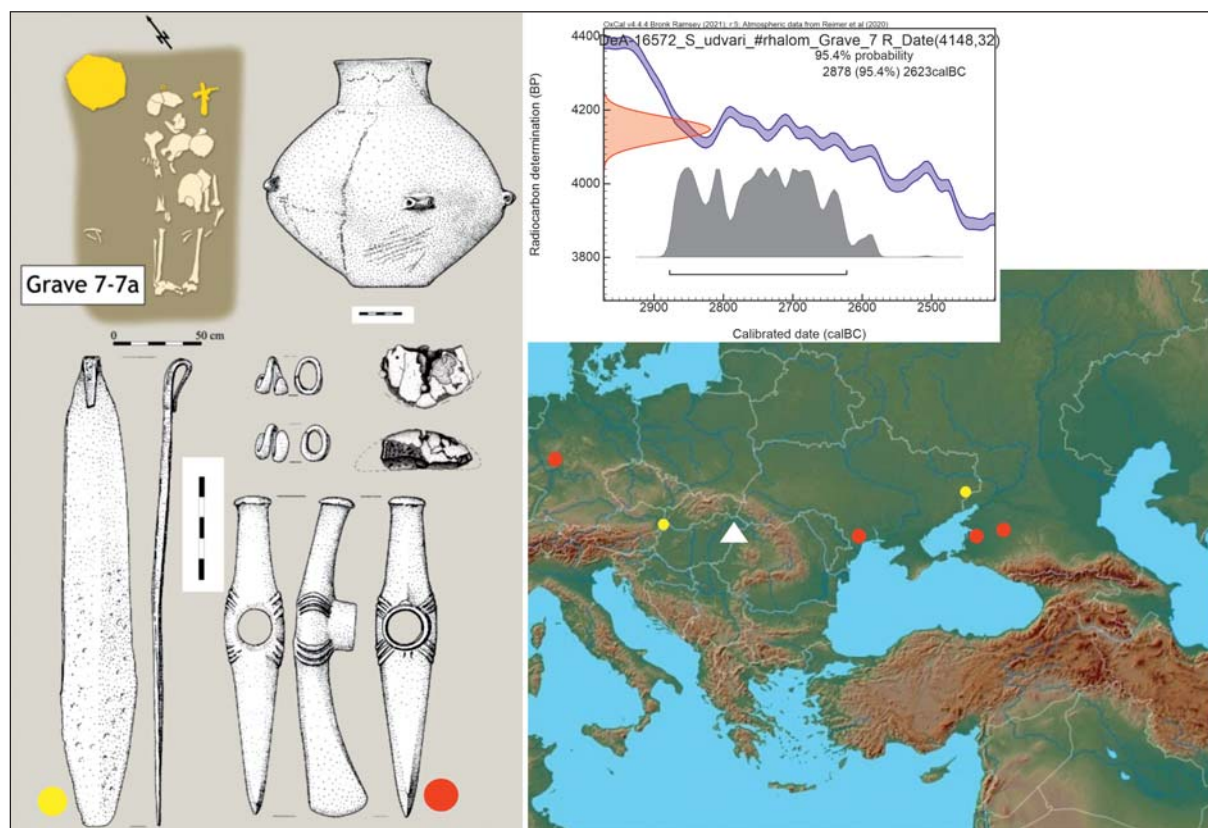


Fig. 6. Sárrétudvari-Örhalom, Grave 7-7a and the network of the copper weapons buried in it

the easternmost pieces (DANI – LANTOS – ANDRÁSI in prep.). In fact, this little hammer-axe is a much lighter and more slender object than the heavy Eschollbrücken-type axes, so it is best appreciated as a prestige weapon. The copper dagger, on the other hand, represents the so-called Manych-type which is known mostly from the Russian steppes, making the Sárrétudvari exemplar one of the westernmost ones (Fig. 6). The silver and electrum hair rings – crafted in different ways – represent a simple type, which has a huge distribution area from the Caucasus through the Russian steppes into the Carpathian Basin (KULCSÁR – SZEVERÉNYI 2013, 78–79; DANI – LANTOS – ANDRÁSI in prep.) These secondary burials of the Sárrétudvari kurgan were labelled in many different ways (from Glina–Schneckenberg through Yamnaya to early Makó-type) but it is clear now that these are not “classical Yamnaya” graves. We can probably interpret them as “Yamnaya-related” elite burials with strong Western Transylvanian (Livezile) connections.

All burials mentioned above are tumulus burial, containing high value prestige objects and unique foreign weapons. Most of them are associated with males. No doubt that these burials may signal the arrival of a new ruling elite of Southeast and Central Europe in the first quarter of the 3<sup>rd</sup> millennium BC. It seems that competition for leadership involved the demonstration of access to foreign objects and perhaps exotic knowledge, exchange and perhaps alliance with the leaders of distant communities. This tradition seems to continue well into the Middle Bronze Age in the Carpathian Basin, where gold hair rings are often included in richly furnished warrior graves (in pairs or triplets) (DANI *et al.* 2016).

Based on the latest compositional and lead isotope analyses of raw material of copper artefacts in Late Neolithic and Copper Age Hungary, multiple Balkan ore sources could be identified (SÍKLÓSI *et al.* in prep.). What do we know about other Early and Middle Bronze Age artefacts? In cooperation with the Curt-Engelhorn Archaeometry laboratory in Mannheim, we have analysed 22 Early and Middle Bronze Age artefacts from Hungary in the frame of the Momentum Mobility Research Project, dated to the period from Reinecke Bronze Age A0 until B1 (KISS 2020a). Preliminary lead isotope results suggest that the copper raw material of these finds, the axe mentioned above from Grave 7 of the Sárrétudvari kurgan, and the axe from the Middle Bronze Age Balatonakali burial with strong Únětice relations, is coming from the Slovakian Ore Mountains (DANI *et al.* 2016, 224, Fig. 5; KISS 2020b; DANI – LANTOS – ANDRÁSI in prep. Fig. 14). At the same time, the fact that the Balatonakali axe is one of the first genuine tin bronze find in the Carpathian Basin dated to the 20<sup>th</sup> century BC, underlines the growing importance of regional copper ore sources in our region.

## Bioarchaeology: physical anthropology, genetics, isotopes

### Physical anthropology and genetics

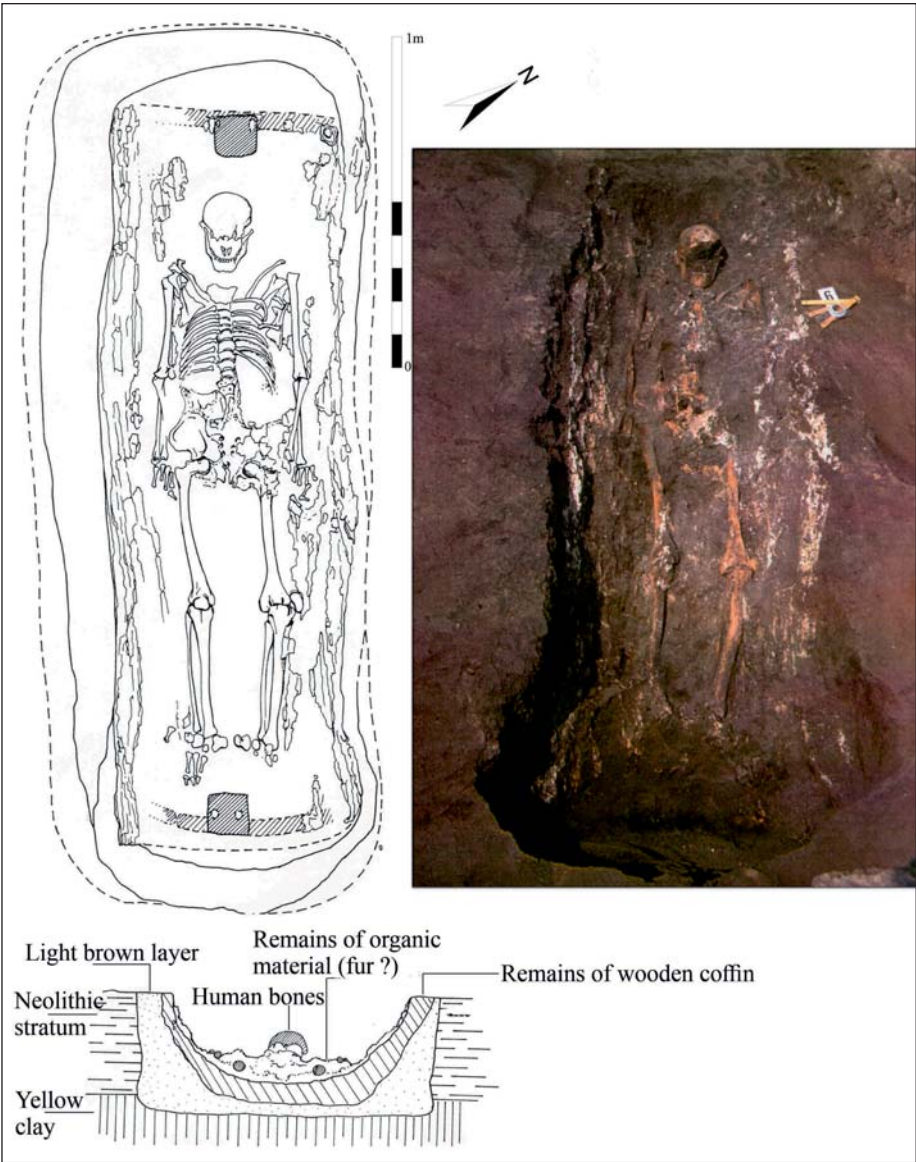
It is probably little known that the presence of a new robust anthropological type (described as eastern “Pit-grave-type” or “Cro-Magnon A-type”) was already predicted decades ago by Zs. K. Zoffmann and A. Marcsik based on their physical anthropological examination of individuals from kurgan burials mainly from the territory of the Great Hungarian Plain. They have described the significance of the “Pit-Grave People” as ‘newcomers’ in the Carpathian Basin, their difference and dissimilarity from the local autochthonous population from an anthropological perspective (MARCSIK 1979; K. ZOFFMANN 2011). Despite the predominance of male burials under kurgans, there were also female and child graves (K. ZOFFMANN 2011, Tab. 3 – summary table) (e.g. the latest one from the site Bojt, Tökös Varga-tag 3 mentioned in the following). However, it is important to emphasise that people with huge stature, robust body and with steppe-related cultural background already appeared in earlier periods, long before the



Yamnaya expansion: maybe one of the first was the male from the burial of Csongrád-Kettőshalom (MARCSIK 1971; 1979) around 4400–4300 BC from Early Copper Age (ECSÉDY 1979, 11–13; DANI 2020, 3). The early Eastern European link (“steppe ancestry”), dating back to the 5<sup>th</sup> millennium BC, is not a unique phenomenon, as it has also been genetically attested in the case of Southeastern Europe (MATHIESON *et al.* 2018).

A very good example of the Pre-Yamnaya burials from the end of 4<sup>th</sup> millennium BC is the burial excavated under the kurgan of Tiszavasvári-Deákhalom, where a giant, very robust male was buried in extended supine position in a wooden coffin (*Fig. 7*).

Researches of Zs. K. Zoffmann and A. Marcsik seem to be validated by the latest aDNA studies performed on Late Copper Age and Early Bronze Age samples from Western, Central and Eastern Europe with respect to the Eastern European origin (ALLENTOFT *et al.* 2015; HAAK *et al.* 2015; HERVELLA *et al.* 2015; OLALDE *et al.* 2018; LAZARIDIS 2018). However, the situation is somewhat controversial in the



*Fig. 7. The giant man of the Pre-Yamnaya burial (Grave 6) of Tiszavasvári-Deákhalom [mound]*

case of the Carpathian Basin: although several individuals associated with the Yamnaya culture were sampled years ago, unfortunately no aDNA results from Hungary have been published so far.<sup>2</sup> That is why the results published so far give only indirect information for the Yamnaya communities of the Carpathian Basin, as the first data published related to the study of the local Bell Beaker complex (OLALDE *et al.* 2018). Detailed analysis of data from this study from Budakalász and Szigetszentmiklós in the vicinity of Budapest, however, provide various levels of steppe-related ancestry among analysed human remains associated with finds of the Bell Beaker package. Archaeogenetic investigation shows very different proportions (from 0 to 75%) of steppe ancestry of roughly contemporaneous individuals (Table 1). This picture is consistent with early stages of mixture between previously established local Late Copper Age population and newcomers having genetic ancestry from the steppe. This means to us that the population associated with the Bell Beaker Complex in Hungary was formed by a mixture of genetically diverse groups.

Table 1. Genetic admixture components and proportions of Late Copper Age and some Early Bronze Age Bell Beaker individuals (after OLALDE *et al.* 2018 amended, after Anna Szécsényi-Nagy, cf. KISS *et al.* 2018)

Group/Site	Mixture proportion (%)		
	Steppe/ Yamnaya	Anatolian Neolithic	Western Hunter- Gatherers
Late Copper Age/Baden period	—	85.6	14.4
Budapest-Békásmegyer Gr. 219/b, Gr. 445 Szigetszentmiklós-Üdülősor Gr. 1, Gr. 13	13.8	68.3	17.9
Szigetszentmiklós-Üdülősor Gr. 12, Gr. 119, Gr. 244, Gr. 458 Kompolt-Kígyósér (GAMBA <i>et al.</i> 2014)	19.4	59.5	21.2
Budapest-Békásmegyer Gr. 452 Budakalász-Csajerszke Gr. 276, Gr. 597 Szigetszentmiklós-Felső Űrge-hegyi dűlő Gr. 552	46.6	37.3	16.1
Szigetszentmiklós-Felső Űrge-hegyi dűlő Gr. 49	—	77.2	22.8
Szigetszentmiklós-Felső Űrge-hegyi dűlő Gr. 133	58.9	28.6	12.5
Szigetszentmiklós-Felső Űrge-hegyi dűlő Gr. 688	75	19	6

Looking at the Late Copper Age – Early Bronze Age samples from this study (Fig. 8), we see mitochondrial DNA lineages that were present from the Neolithic, but also lineages that might originate from Western Europe (such as certain H haplogroups). On the other hand, I1 and I3 mitochondrial haplogroups had steppe (perhaps Yamnaya or Corded Ware) origin. The Y chromosomal R1b is a new Y-lineage in the Early Bronze Age of the region, which transforms the Neolithic–Copper Age paternal diversity showing mostly G2 and I haplogroup dominance.

It is very interesting that Y chromosomal R1b lineage was present in 84 out of 90 analysed Bell Beaker associated males in Europe (outside Iberia). This shows that Bell Beaker-associated people have a prominent role disseminating this lineage (OLALDE *et al.* 2018).

Further Yamnaya samples from the Carpathian Basin have been analysed and now are under publication in international collaboration with the Department of Genetics at Harvard Medical School and other laboratories. It is a great challenge for the international team now to determine whether the

<sup>2</sup> The first study of this kind, including samples of Yamnaya and Yamnaya-related individuals from Hungary, is currently in preparation (SZÉCSÉNYI-NAGY *et al.* in prep.).

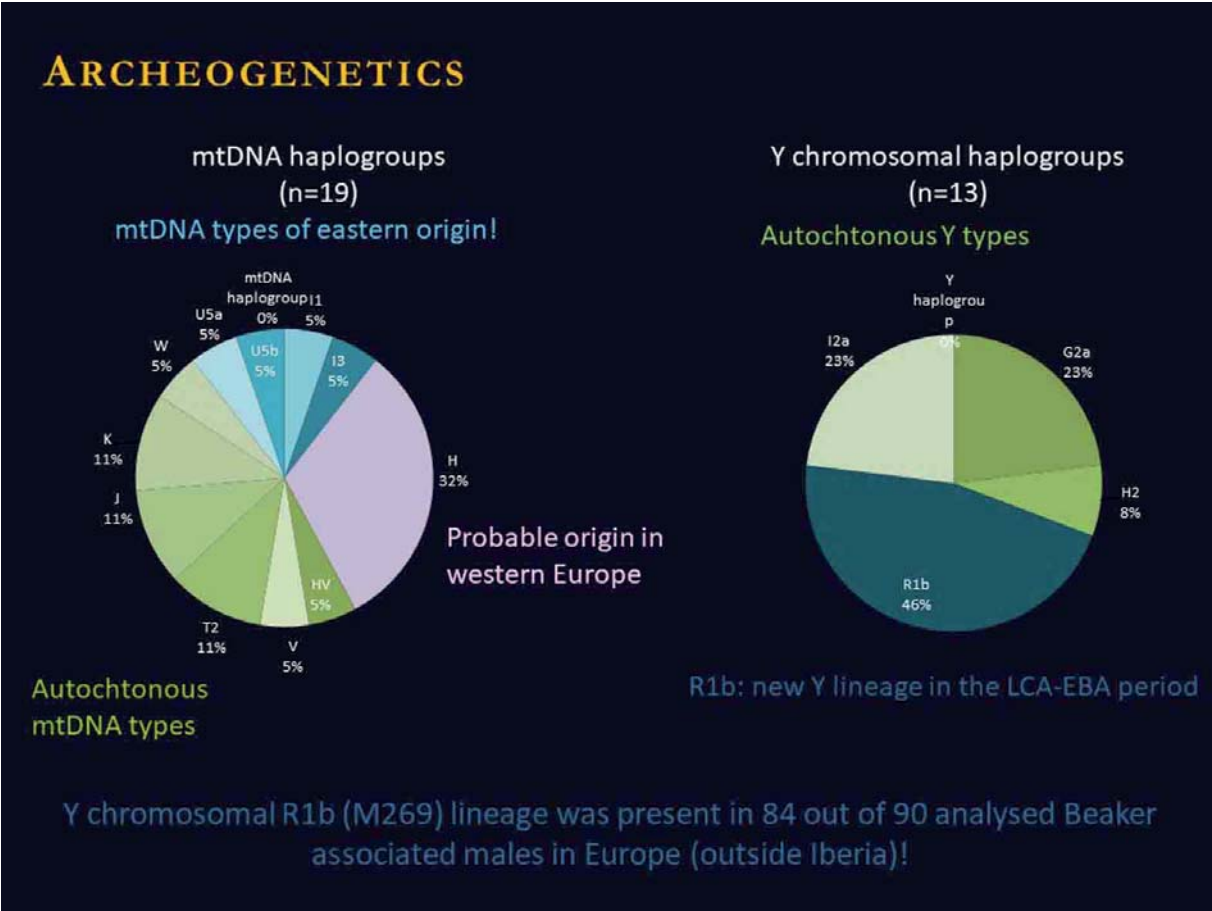


Fig. 8. Diagrams of main mtDNA and Y chromosomal haplogroups of Bell Beaker associated individuals from Europe (raw data taken from OLALDE *et al.* 2018, drawn after Anna Szécsényi-Nagy; cf. KISS *et al.* 2018)

appearance of steppe-related ancestry is associated with the Bell Beaker population (contributing to the Corded Ware gene pool) or it is associated with genuine Eastern European Yamnaya groups who erected kurgans from the 3<sup>rd</sup> millennium BC in the Great Hungarian Plain. The first comparative analyses suggest that both scenarios contributed to the new genetic diversity of the Early Bronze Age of the Carpathian Basin, but in different times and to different extent (SZÉCSÉNYI-NAGY *et al.* in prep.).

Isotopes

The first ever stable isotope examinations from the Carpathian Basin were carried out on the material of Sárrétudvari-Órhalom kurgan (GERLING *et al.* 2012a; 2012b). As we have seen it was a perfect example for good cooperation of traditional archaeological methods, radiocarbon based chronology and stable isotopic studies of the period 3300/3200–2500/2400 cal BC. The stable isotope data from the Prehistoric burials of the Órhalom cast light on the life and mobility pattern of the Early Bronze Age nomadic communities: in this case, the stable isotope (Sr/O) data suggest also connection with the region of the Apuseni Mountains of Western Transylvania and a sort of ancient seasonal transhumance between the two territories. It is remarkable that, based on modern ethnographic data, this transhumance route survived until the early 20<sup>th</sup> century (DANI 2014). However, more recent stable isotope analyses yielded some surprising results, this time from Transylvanian Early Bronze Age sites. The burial mounds are

also present in Western Transylvania, where they are seen in association with the Livezile group and date to the post-Coțofeni period. All sites are located in the eastern belt of the Apuseni Mountains within the Transylvanian Basin. The Livezile group dates to the beginning of the Early Bronze Age and is distributed in the eastern fringe of the Apuseni Mountains. The burial tradition includes the inhumation of articulated and disarticulated skeletons in contracted positions. Their dead were laid directly on the surface and were covered by stone mounds. Settlements are mainly located in dominant positions such as hilltops but there are also remains of temporary sites in rock shelters and even caves. The beginnings of the Livezile group can be put in the first half of the 3<sup>rd</sup> millennium BC, most likely after 2700 BC (GERLING – CIUGUDEAN 2013, 182–186).

The published data suggests there was restricted or small range mobility in the highlands of Western Transylvania during the Early Bronze Age, and that different pastures or herding practices were used by chronologically similar cultural groups (GERLING – CIUGUDEAN 2013, 193–195, Fig. 11). Comparing isotopic data from burial mounds in eastern Hungary, one observes that the Transylvanian data sit approximately in the middle of what can be reconstructed as a triangle of the  $^{87}\text{Sr}/^{86}\text{Sr}$  samples from Sárretudvari-Órhalom and Kétegyháza-Kétegyházi tanyák. In the light of this complemented dataset it can be assumed that the isotopic outliers from Sárretudvari-Órhalom do not agree with the results from the selected Transylvanian sample sites. The most recent results of catchment analysis of the Livezile communities indicate that there was a distinct segmentation in the choice of cemetery and settlement locations (QUINN – CIUGUDEAN – BECK 2020, 7–9), which may partly explain the different mobility patterns as well.

## Horses

Horses and their domestication is one of the main question of the European Prehistory in the period of 4<sup>th</sup>–3<sup>rd</sup> millennium BC. Although it is tempting to explain the spread of the domesticated horse in Bronze Age Europe by the impact of the Yamnaya expansion, we do not yet have enough and clear evidence for this. Moreover, the question of horse domestication and the search for primary and secondary centres of domestication is a very complex and difficult issue, which has been the subject of many debates and pitfalls (OUTRAM *et al.* 2009; LIBRADO *et al.* 2016; GAUNITZ *et al.* 2018; FAGES *et al.* 2019; KHAN 2019).

Horses appeared in the Carpathian Basin in the mid- and end of the 4<sup>th</sup> millennium BC, in the Baden context, on settlements and cemeteries, but only a few horse bones are known (GÁL 2017a, 58, 61). From the first half of the 3<sup>rd</sup> millennium BC, we have now only one AMS radiocarbon dated example from Transdanubia (Szűr-Cserhát, Feature 37) (GÁL 2017a, 111).

Nevertheless, from the mid-3<sup>rd</sup> millennium BC onward the amount of horse bones is low in the Somogyvár–Vinkovci culture (Dombóvár-Tesco, Paks-Gyapa, Ordacsehi-Bugaszeg, the fortified site of Kaposújlak–Várdomb: GÁL 2009, 49, 52, Fig. 2; SZABÓ – GÁL 2013, 71–73; GÁL 2017a, 69, 73, 78, 88, 93, 100, 104, 113, 121, 132–133, Fig. 74; 2017b, 465–467, Fig. 3–6). It becomes a little more frequent on the Kisapostag sites of the mentioned region (GÁL 2017a, 116, 121, 126). Without genetic studies, it is not possible to say for sure whether these horses were the last wild specimens or the first domesticated ones in the Southern Transdanubian region (GÁL 2017a, 160, Fig. 86). However, we do not yet have information concerning Yamnaya sites.

One of the most striking archaeozoological result from the Bell Beaker sites next to Budapest is the high number of horse bones. In the other regions associated with the Bell Beaker phenomenon (e.g. in Moravia) it is not observed. In fact, the sites with the highest recorded ratio of horse remains are located in the region of Budapest: at the main sites of the period e.g. at Szigetcsép-Tangazdaság, at Csepel-



Háros, at Szigetszentmiklós and at Csepel-Hollandi út, horses represented increasing proportion of the faunal assemblages (NISP) with *ca.* 24, 45, 50, and 60% respectively (GÁL 2009, 52–53; 2017a, 136; 2017b, 470) (*Table 2*). Even at the site of Mezőkomárom-Alsóhegy, horse bones are relatively frequent (10.2%) (GÁL 2017a, 136). At the very well analysed Albertfalva site, the proportion of horses in the faunal bone assemblage was *ca.* 38%; local findings suggest that beef was the most important element of the diet in terms of meat consumption, while horse meat,<sup>3</sup> the other basic source of animal protein, contributed to a somewhat smaller extent (LYUBLYANOVICS 2016).

*Table 2. Horse remains and its proportions at some Bell Beaker period settlements in Hungary (after BÖKÖNYI 1978, 37–38; VÖRÖS 1988, 24, Table 1; LYUBLYANOVICS 2016; GÁL 2017a, 136; Biller, A. Zs. pers. comm.)*

Site	Proportion (%)	NISP
Albertfalva	38.10	3,304
(Budapest) Csepel-Háros	44.90	2,752
(Budapest) Csepel-Hollandi út	59.30	3,876
Szigetcsép-Tangazdaság	23.7	?
Szigetszentmiklós-Üdülősor	<i>ca.</i> 50	>8,000

In contrary to the Bell Beaker situation, the archaeozoological examination has identified only one piece of horse bone among more than 10,000 fragments of animal bones from one of the largest excavated Makó settlement, from Berettyóújfalu-Nagy Bócs-dűlő in Eastern Hungary (unpublished data of Márta Daróczi-Szabó). We can see similar underrepresentation of horse bones from other Early Bronze Age sites from central part of Hungary (e.g. the Makó site of Üllő 5) (KÖRÖSI 2005, 142, Table 5).

Although Sándor Bökönyi interpreted the considerable amount of horse remains as a definite proof of horse domestication (BÖKÖNYI 1978, 35–38, Table 11–12), it is in fact not absolutely clear. The methods for distinguishing wild and domestic specimens on the basis of size and morphological features, kill-off patterns and number of identified specimens (NISP) ratios are not reliable. In fact, an increase in the number of horse bones may be a multifactorial phenomenon, linked with climatic shifts, the reorientation of farming systems and a change in natural habitat and nutritional situation in the background; moreover, variation in body size and morphology may as well reflect natural horse populations. In the area of present-day Hungary, however, horses seem to have had a prominent role in the economic – and, consequently, the social or perhaps even ritual – life of Bell Beaker communities. This question, however, requires further investigation through e.g. residue analyses for the remains of mare’s milk and aDNA research (GÁL 2015, 370–374; 2017a, 136). Currently, aDNA examinations of 35 horse bone samples from Mesolithic to the Middle Bronze Age are being conducted in collaboration with Ludovic Orlando and his research group. Based on preliminary results of mitochondrial DNA examinations, the Carpathian Basin could be a potential domestication center. However, the situation is much more complex and is currently in a working phase.

<sup>3</sup> “All body parts of horses are present, suggesting that these were probably domesticated animals, kept and slaughtered at the settlement. The presence of young stallions may indicate a conscious breeding strategy. Most of the juvenile horses (represented by 521 bones) were killed at an age of *ca.* 2 years or a bit earlier. It seems that strong joints of the extremities of the pelvic girdle were cut through by strong metal or stone tools, while most of the bones were simply broken up for marrow extraction and further processing. These were rather small animals with massive legs (the slenderness indices vary between 16.3 and 17.5). Their size corresponds to other Bronze Age horses brought to light from the region of the Carpathian Basin” (LYUBLYANOVICS 2016, 205–207.)

## Yamnaya package

The “Yamnaya Package” as originally defined by Richard Harrison and Volker Heyd in their key publication (HARRISON – HEYD 2007) probably does not exist as such. A more plausible scenario seems to be that the appearance of its various components is associated with different periods and various cultural backgrounds (DANI – SZEVEÉNYI 2021 in press). A new complex approach, linked to this specific way-of-life, is a more faithful reflection of the essence of the “Yamnaya Package” as it was defined in FRÎNCULEASA – PREDA – HEYD 2015, 84–86, Fig. 18 and HEYD 2019, 125–126: 1) new subsistence strategy based on specialised breeding and herding of cattle and probably ovicaprids (sheep and goat), at least in the case of the Carpathian Basin; 2) new mobility-patterns closely connected to herding and protecting the herd and flock, constantly searching for more and more fresh pasture; 3) new pastoral/nomadic way of life with a new material culture that goes with it, using predominantly organic materials,<sup>4</sup> use of few ceramics, but with the emergence of metals (copper and early copper based alloys), rapid transformation of personal weaponry (axe, hammer-axe, dagger) into metal; 4) new burial custom (pit-grave covered with mat and wooden planks, sometimes carefully elaborated wooden chamber under kurgan; special preparation of the grave pit/chamber (lining with animal skins, hides, woven blankets); usual W–E orientation of the deceased; special position of the body in supine position with legs drawn up to the knees; common use of ochre painting, scattering or deposition of ochre lumps; 5) widespread use of new means of transportation (wheeled wagon pulled by cattle/oxen); 6) new ideology based on male dominance, individuality, a kind of defensive/warrior mentality and finally most likely a patrilineal kinship-system (ZENG – AW – FELDMANN 2018), which could form the basis of the later Bell Beaker kinship tradition as well (SJÖGREN *et al.* 2020).

## Environmental landscape: Paleoenvironment

It is important to understand the environmental and climatic conditions that enabled the Yamnaya communities to practice their nomadic way of life in the eastern parts of the Carpathian Basin. The recent paleoenvironmental studies suggest that the changes affected the social, economical spheres from the mid-5<sup>th</sup> millennium BC were partly induced environmental and climatic changes. This was a slow process, which is well-documented based on the so-called ‘Arvicola’ (water vole) humidity curve and connected to the increasing aridity of the climate from the 2<sup>nd</sup> part of the Atlanticum (from approx. 4500 BC, which corresponds with the beginning of the Copper Age in the Carpathian Basin) and covering the first third of the Subboreal period (HORVÁTH 2000, 154, 156, Fig. 1). However, this was not a constant process, and the Arvicola curve shows fluctuations. Yet it appears that the humidity conditions may have been quite low between 3000–2800 BC (Fig. 9), which may have favoured the formation of grass vegetation on larger flat areas.

Similar processes are evidenced in Transdanubia by the study of carbon and oxygen isotope composition of *Unio pictorum* shells from a Late Copper Age settlement on the shore of Lake Balaton, which also suggests that the climate became gradually drier and/or warmer during the period Early Classical and Late Classical Baden periods, resp. between 5310–5060 cal yr BP and 5040–4870 cal yr BP (SCHÖLL-BARNA *et al.* 2012, 97–98).

<sup>4</sup> Grass, bulrush, reed, cord made of plant fibres, wood, fur, hides/leather, animal tendon, wool, bone and horn, etc. which are completely degradable and remain invisible to archaeologists in the soil and humidity conditions of the Carpathian Basin. The latter may be a tangible explanation for many of the Yamnaya burials “without any grave goods”.

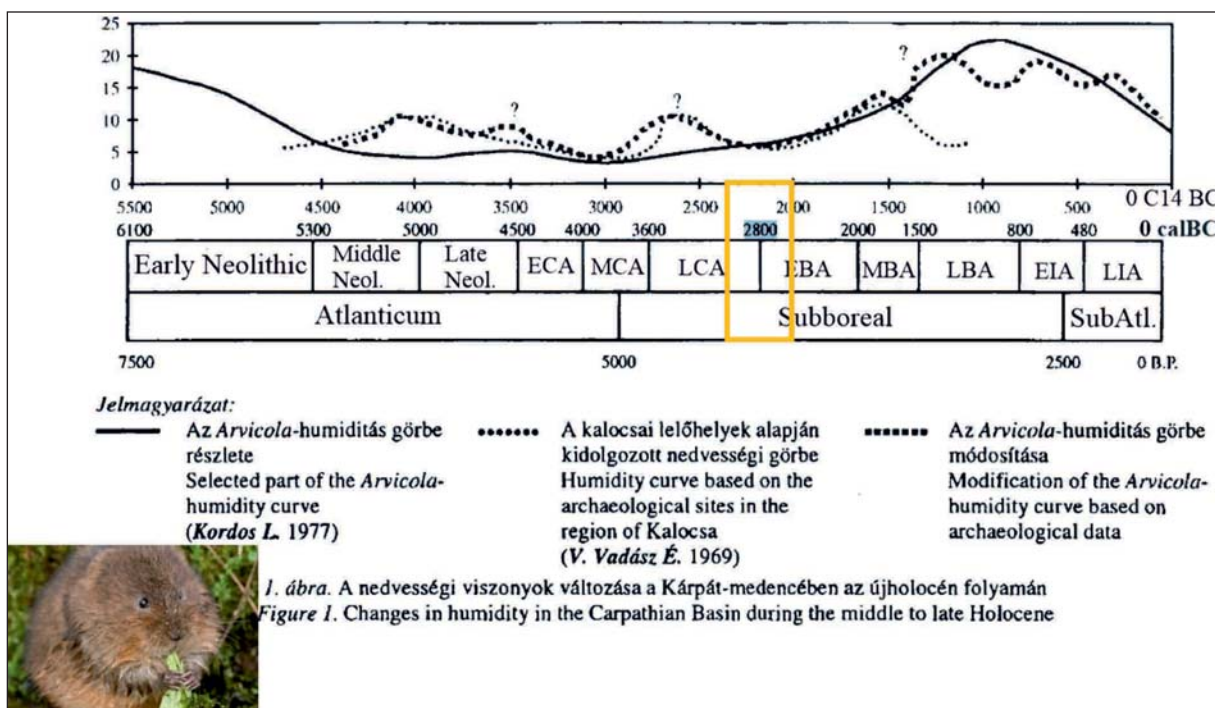


Fig. 9. *Arvicola* humidity curve of Prehistorical times of the Carpathian Basin (after HORVÁTH 2000, Fig. 1. amended)

The kurgans as earthen mounds – acting as a sort of ‘time capsules’ – have preserved well the former (Prehistoric) soil- and environmental conditions. Thanks to the sampling via undisturbed cores of mounds we have already several direct data (molluscs, phytoliths, pollens) from the Great Hungarian Plain (e.g. Hajdúnánás-Tedej, Lyukas-mound; Csípő-mound and Ecse-mound from Hortobágy; Bán-halom from Kenderes), which suggest that a steppe and wooded steppe environment can be reconstructed in eastern Hungary for the 1<sup>st</sup> half of the Subboreal period onward (BARCZI – GOLYEVA – PETŐ 2007; PETŐ – BUCSI 2008; PETŐ *et al.* 2016; BEDE *et al.* 2015). These results practically refer to the same paleoenvironmental conditions as the *Arvicola* humidity curve.

From another point of view, fragments of the natural grassland vegetation are often preserved only in those areas which are inadequate for arable farming. Fortunately, in many cases kurgans hold the last remnants of dry grasslands in lowland areas, like in the case of the intensively cultivated Great Hungarian Plain. The steep slopes of some undisturbed kurgan with various micro-sites and exposures supported a species-rich vegetation. Despite their small area they serve as a refugium of loess grassland vegetation (several forest steppic species and several steppic flora elements as is well documented in the case of the Hencida and Mondró mounds (DEÁK *et al.* 2015, 147; DEÁK *et al.* 2016). To sum up, these environmental conditions may have been ideal for the nomadic, mobile way of life of the Yamnaya herders.

### Symbolic/mental landscape – Case study of Bojt

With the case study of the site Bojt, Tökös Varga-tag 2 (Hajdú-Bihar County, Eastern Hungary from the Bihar Plain), we would like to illustrate how a newly arrived Yamnaya community adapted, integrated and



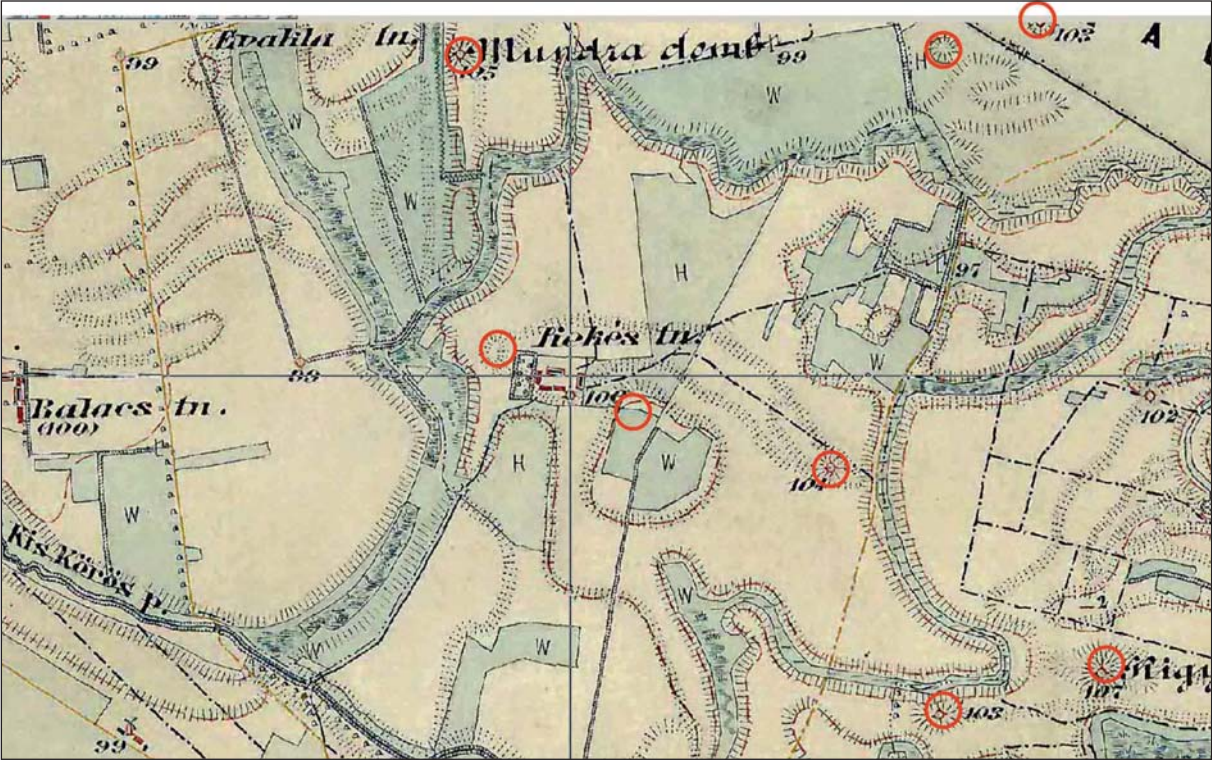


Fig. 10. Landscape with prehistoric kurgans in the northern periphery of Bojt, Eastern Hungary on the 3<sup>rd</sup> Habsburg military survey

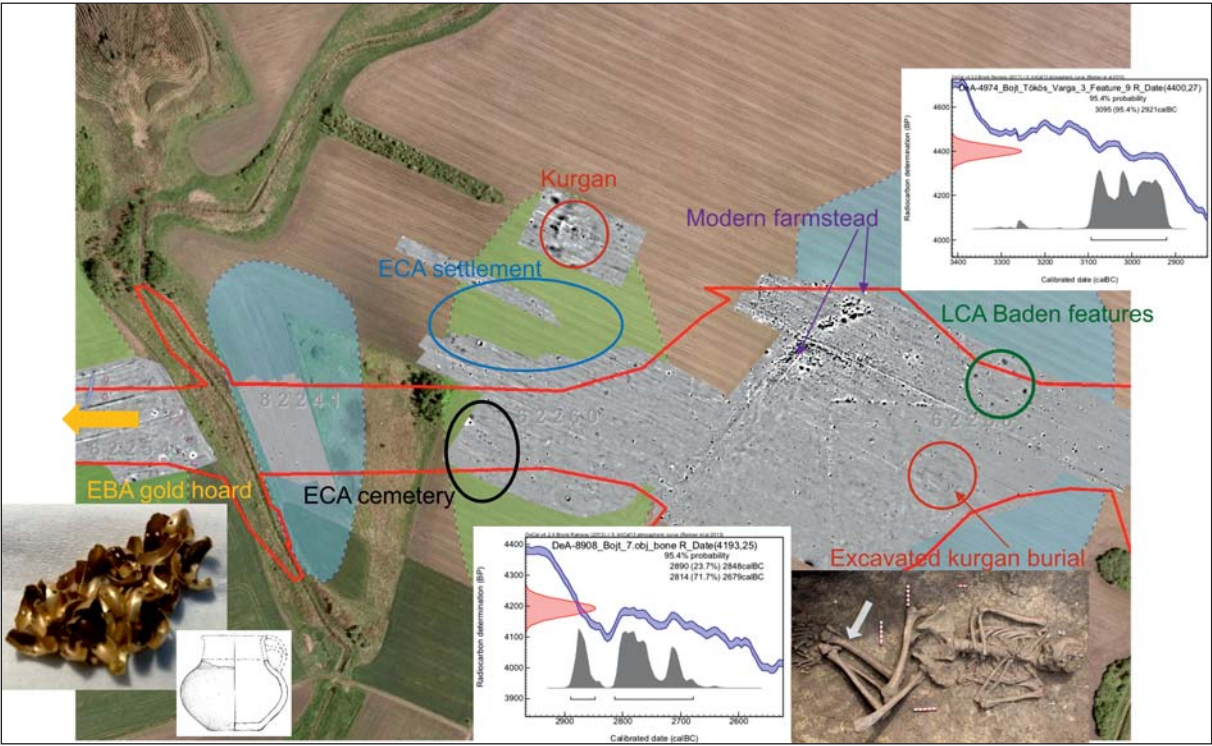


Fig. 11. Reconstruction of the prehistoric symbolic landscape in the northern periphery of Bojt, Eastern Hungary on the satellite image of GoogleEarth



Table 3. Overview and comparison of the interactions between Yamnaya and local groups in the Carpathian Basin

Categories	Yamnaya	Local groups	
		Late Copper Age (Baden)	Early Bronze Age 1 (Late Vučedol, Somogyvár–Vinkovci, Makó)
Settlements	Not known beside Late Baden/Coţofeni settlements – temporary camps ? Corded Ware material from some West Romanian caves	Larg(er) permanent settlements	Big, sometimes fortified settlements in Transdanubia vs. mobile lifestyle, short-lived settlements, very sporadic, loose farmsteads in the Great Hungarian Plain
Burials	Kurgan/earthen tumulus (indiv.) Pit-grave with/without wooden structure Red ochre painting Colour blankets and/or animal furs Stelae on the kurgans/burials	Cemeteries, biritual	Small burial groups, predominance of cremation, and in special cases some skeletons from pits
Physical anthropology	Robust body, high stature (aggressive, violent behaviour ?)	Heterogenous populations with strong S-SE-European component	? (because of cremation)
Genetics	Appearance of new Y-lineage (R1b) and other E-European haplotypes	Dominance of local Late Neolithic and Copper Age haplotypes	?
Diet	Based on the height of known individuals probably protein-rich (meat, milk, blood)	Crop-based with meat (no isotope analyses yet)	Crop-based with meat ?
Subsistence strategy Economy	Mobile/nomadic way of life based on livestock breeding (cattle and ovicaprids?)	Permanent settlements: animal husbandry + crop production	Big, sometimes fortified hilltop settlements in Transdanubia vs. mobile lifestyle, short-lived settlements in the Great Hungarian Plain
Transportation	Wagons, horse domestication (?)	Wagons pulled by oxen (clay wagon models)	Wagons pulled by oxen (clay wagon models), horse (?)
Pottery	Cord decoration eg. New forms, appearance of beakers, pedestalled bowls (censers), amphorae	Local forms, ornamentation & production; high variety, long-term specialized forms	Broad distribution of inner decorated pedestalled bowls

<b>Metals/Metallurgy</b>	New metals: silver & electrum, beside the gold and copper casting in bivalve moulds, alloying attempts (As copper)	Metals are very rare (using mainly non-alloy metals, but exceptionally As copper)	First, alloyed coppers (“experimental alloys”, not classical bronzes)
<b>Weapons/Weaponary</b>	Massive copper shaft-hole axes and slim pickaxes (Sárrétudvari-Őrhalom) Long daggers (Manyich type or long triangular form with middle rib)	Polished stone axes, flint blades First short and small metal daggers	New, improved types of shaft-hole axes
<b>Jewellery/Dressing</b>	Lockenrings from precious metals (warrior’s beauty) Hammer-headed bone pins	From shells, snails, animal bones	Richly adorned females (based on figurines)
<b>Stone stelae / Human representation</b>	Stelae of anthropomorphic type in cubic, iconic form (well identifiable details - males)	Stelae of aniconic type (column-like form, rough work-out); anthropomorphic vessels (as burial urns) and female clay figurines (“headless figurines”)	Well elaborated clay figurines (mainly females)
<b>Social aspects/ differentiation</b>	<p>’Warrior class’ (individuality)</p> <p>The expressed role of the smith/metalworker</p> <p>Generally male graves under the kurgans</p> <p>Noble metals in the graves</p> <p>Hoarding tradition (weapons (eg., Tápé, Debrecen)</p> <p>New connections/re-establishing of the chaîne opératoire (ore sources)</p> <p>New media of prestige (personalised weaponry; jewellery, big burial mounds)</p>	<p>Social differentiation is not very pronounced ?</p> <p>Gender balanced in the cemeteries</p> <p>Human and animal sacrifice (cattle)</p> <p>?</p> <p>Cattle herd</p>	<p>?</p> <p>?</p> <p>Re-establishing external contacts, new mining places/ore sources</p> <p>Predominance of cattle</p>
<b>Nature of interactions</b>	Warfare/Violence – Epidemics – Symbiosis/Acculturation/Assimilation?		

shaped the local Prehistoric landscape with their burial monuments. This landscape located on the northern bank of the Kis-Körös River (on the northern periphery of village Bojt) was founded by a local Early Copper Age (Tiszapolgár) community who established their settlement and community burial place on the eastern bank of the Dusnok brook around 4500 BC. This cemetery (with 33 excavated burials) contains some remarkable burials: 2–2 graves with gold or copper jewellery, 7 males buried with their dogs (HÁGA 2021, 225–234). At the same time a solitary Early Copper Age symbolic burial (with 2 vessels and a long flint blade) was excavated on the western bank of the Dusnok (DANI – DEÁK 2021, 219).

Several hundred meters east of the Tiszapolgár cemetery, four features of the Late Copper Age Baden culture forming a rectangular construction, dated to 3300–3200 cal BC, came to light. Around the turn of the 4<sup>th</sup>–3<sup>rd</sup> millennium BC erection of Yamnaya kurgans along the banks of the stream can be observed (*Fig. 10*). Among these tumuli a completely eroded kurgan identified by geophysics was excavated in 2014 (DANI *et al.* 2017, 146–148, *Fig. 10–11*). This demolished tumulus covered the body of a 16–18 years old girl buried in characteristic position (lying on her back, knees drawn up) and oriented in a SW–NE direction, between 2890–2680 cal BC. Finally, during the preventive excavations of the construction works of the M4 motorway a fascinating gold hoard (containing 1,768 pieces of little sewn appliques in a little jug) from the other bank of the brook was found (DANI – DEÁK 2021, 219–222) (*Fig. 11*). It is clear that the erection of Yamnaya tumuli has created a new legitimacy and given a new quality and meaning to the symbolic landscape of Bojt.

### Summary

No detailed, definitive summary narrative is provided at the current stage of research. Instead of traditional conclusions, we summarize in a table the main research areas and issues concerning the westernmost Yamnaya communities from the Carpathian Basin (*Table 3*).

### Acknowledgements

We would like to express our gratitude to Anna Szécsényi-Nagy and Erika Gál, for their selfless help with the summary of aDNA and archaeozoological research. And last but not least, special thanks to Maxime Bami (Johannes Gutenberg University, Mainz) for his useful advices to the text.

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# Infiltration of Yamnaya culture into the north-Carpathian region – Assessing our preliminary knowledge<sup>1</sup>

JOZEF BÁTORA

## Abstract

*This paper summarizes the results of earlier, as well as later research, regarding the infiltration of Yamnaya culture into the North-Carpathian region. In recent years, archaeologists have been supporting the hypotheses that intercultural and interregional contacts existed between two geographically distant, but as we shall see – in some cultural elements, surprisingly close regions. Beside these contacts we can observe evidence of movements and migrations, in which Eastern European nomadic tribes were participating the most. It is interesting that bearers of the Yamnaya culture in this period settled not only in flat areas of the upper Tisza valley, known for their steppe-like environment. We can also determine their presence in the northern region of east Slovakia and southern part of central Slovakia, which was settled by the Baden culture. In this connection, we should direct our attention to the situation observed at the settlement at Košice-Barca, where in layer IV/1, together with the Baden culture ceramics, shards with corded decoration were found. We can encounter similar corded decoration in the upper, third layer at the Michajlivka settlement on the Lower Dnieper in the Ukraine, which is dated to the later phase of the Yamnaya culture. In this context, the new stratified finds from the mound graves of the Corded Ware culture from the area of southeast Poland (Koniusza, Świète), where some components of the Yamnaya-Katakombnaya cultures are evidently present, are especially important. On many sites of the Late Baden culture in the middle and east Slovakia were found together the material of the Corded Ware settlement pottery and the artifacts of Vučedol style, i. e. Kosihy-Čaka-Makó and the Nyírség-Zátin cultures (for example Beša, Gánovce, Zátin, Žehra-Dreveník). Evidently, communities of Vučedol or those with steppe characteristics, as well as the Corded Ware culture caused the complete downfall of the last remains of the Late Baden culture in the examined area.*

*Long before excavations of solitary mounds in the northwestern part of Hungary (Rajka-Modrovich puszta, Gönyű), in the southwestern part of Slovakia (Šurany) and in eastern Burgenland (Neusiedl am See) it has been shown that the movement of nomadic tribes of the Yamnaya and Katakombnaya cultures along the Danube at the end of the Eneolithic, was heading not only to the Upper Tisza valley but also to the northwestern Transdanubia and northern spurs of the Danubian Lowlands. Besides the potential grasslands, they were attracted to the area of southwest Slovakia mostly by the sources of non-ferrous metals like copper, gold and silver, located in nearby central Slovakian volcanic mountains.*

**Key words:** *Middle Danube-Carpathian area, Late Baden culture, Yamnaya culture, Vučedol cultural complex, pottery decorated with corded ornamentation, mobility, infiltration*

Contemporary research suggests that cultures in the Danube-Carpathian region were not solely on the periphery of more advanced cultures of the East Mediterranean, but were also standing on the western periphery of the Eurasian steppe zone. In this direction, the cultural and historical development in this

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<sup>1</sup> Research reported in this paper was supported by The Slovak Research and Development Agency under the contract nr. APVV-14-0550 and grant VEGA nr. 1/0100/19.



area was influenced and connected to the cultural and historical development mainly in the North-Pontic area.

In recent years, archaeologists have been supporting the hypotheses that intercultural and interregional contacts existed between two geographically distant, but as we shall see— in some cultural elements, surprisingly close regions. Bearers of these cultures and cultural groups from both areas were communicating with each other during prehistory, as well as protohistory. Beside these contacts we can observe evidence of movements and migrations, in which Eastern European nomadic tribes were participating the most.

Nomadic groups in Eastern European steppes evidently used wheeled vehicles for transport and movement at the end of 4<sup>th</sup> millennium BC (33<sup>rd</sup>–31<sup>st</sup> centuries BC) (TURECKIJ 2004, 198). Even if we still lack clear evidence for using horses as beasts of burden in this period (BOROFFKA 2004, 470–471) we can assume that bearers of the Yamnaya culture were able to overcome long distances in a relatively short time. That is why the movement from the North-Pontic region to the Carpathian-Balkan area did not have to be a long and gradual process.

The first presence of nomadic groups could be observed at the beginning of the Late Neolithic, at the end of the Tiszapolgár and the beginning of Bodrogkeresztúr cultures. It is well documented by the cemetery in Decea Mureşului and by a grave from Csongrád-Kettőshalom (PATAY 1981, 237). The Second wave of the steppe population called the pre-Pit Grave (pre-Yamnaya) in the northeastern part of the Carpathian Basin is connected to the period of the Late Bodrogkeresztúr culture and the Lažňany-Hunyadihalom group, with the emergence of the Boleráz and the Cernavoda III cultures (HORVÁTH *et al.* 2013, 171). The Third wave is represented by the early horizon of the Yamnaya culture that could

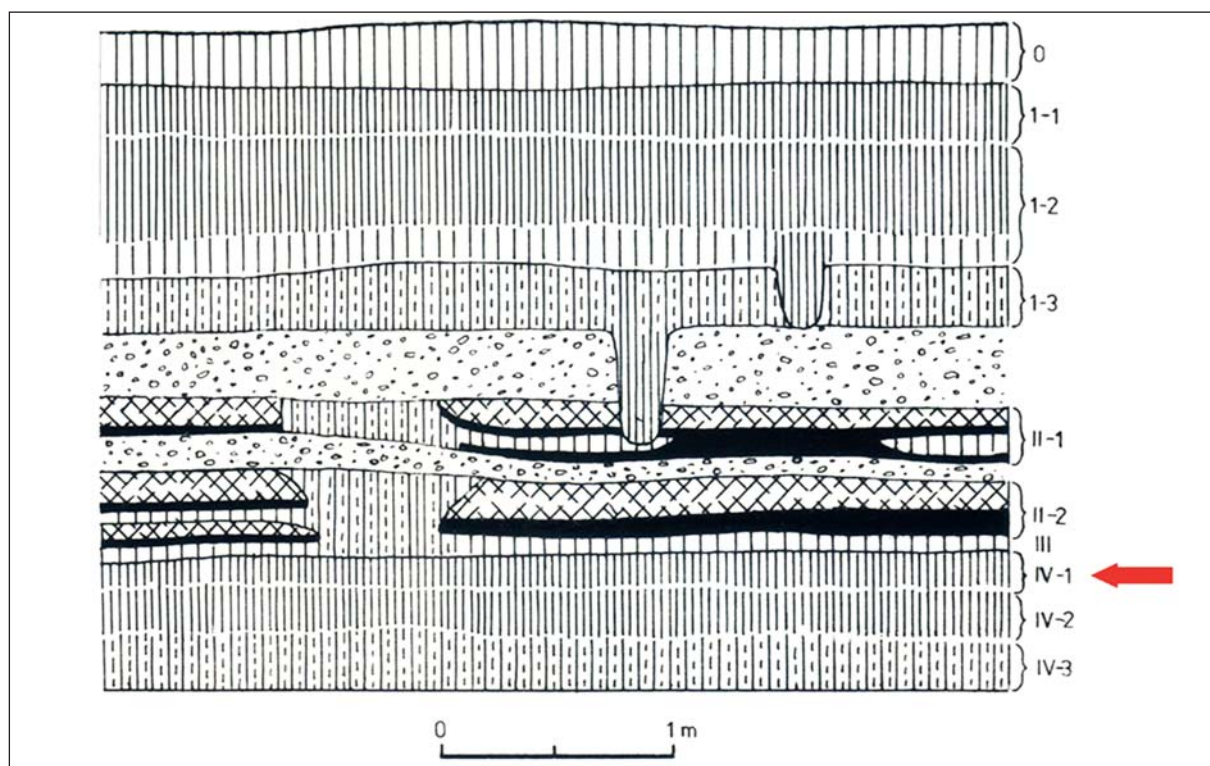


Fig. 1. Košice-Barca (Slovakia). Profile with stratigraphy on multilayered settlement; layer IV/1, which contained the artefacts of Baden culture and pottery decorated with cord is marked by an arrow (after HÁJEK 1961)

be dated to 3300/3100–2900/2600 cal BC and is in the researched area connected to the period of the Baden/Coţofeni IIa, b (HORVÁTH *et al.* 2013, 171). Graves underneath mounds from the upper Tisa valley region, for example in Sárrétudvari-Órhalom (graves nos. 8 and 10), Tiszavasvári-Gyepáros, Kétegyháza-Török halom (kurgan 3, grave no. 4) (DANI – HORVÁTH 2012, 148) could also be dated to this horizon. It is interesting that bearers of the Yamnaya culture in this period settled not only in flat areas of the upper Tisza valley, known for their steppe-like environment (and hundreds of mounds are still, even today, clearly visible on the flat terrain) (ECSEDY 1979). We can also determine their presence in the northern region of east Slovakia and southern part of central Slovakia, which was settled by the Baden culture. In this connection, we should direct our attention to the situation observed at the settlement at Košice-Barca, where in layer IV/1 (Fig. 1), together with the Baden culture ceramics, shards with corded decoration were found.

These ceramics were later named “Východoslovenská šnúrová keramika” (East Slovakian Corded Ware culture) (HÁJEK 1961, 65), and subsequently by J. Vladár named as the East Slovakian Corded Ware culture of the Barca type (VLADÁR 1966a, 93, 94; VLADÁR 2008, 75–80) (Fig. 2.A). From the published material, it is not possible to clearly determine, whether the Baden culture ceramics from the cultural layer IV/1 in Košice-Barca is dated to the classical or to the later phase. Flat copper axes (Fig. 2.A: 9) found in the same layer suggest the classical phase, however, numerous shards decorated by incised, twig-like ornament and indented bands (HÁJEK 1961, fig. 5) are typical for the later phase (Fig. 2.A: 3, 8). This ornamental package is the same as the Coţofeni culture finds, as known not only from the area of northwestern Romania (ROMAN 1976, tab. 41/3,21; 47/2), but also from the area of eastern Slovakia, from Zemplínske Hradište (HORVÁTHOVÁ – CHOVANEC 2006, tab. III:1–3, 4). Probably with the Coţofeni culture, in the second phase (Coţofeni II), the elements of the Kostolac culture (ROMAN – NÉMETI 1978,

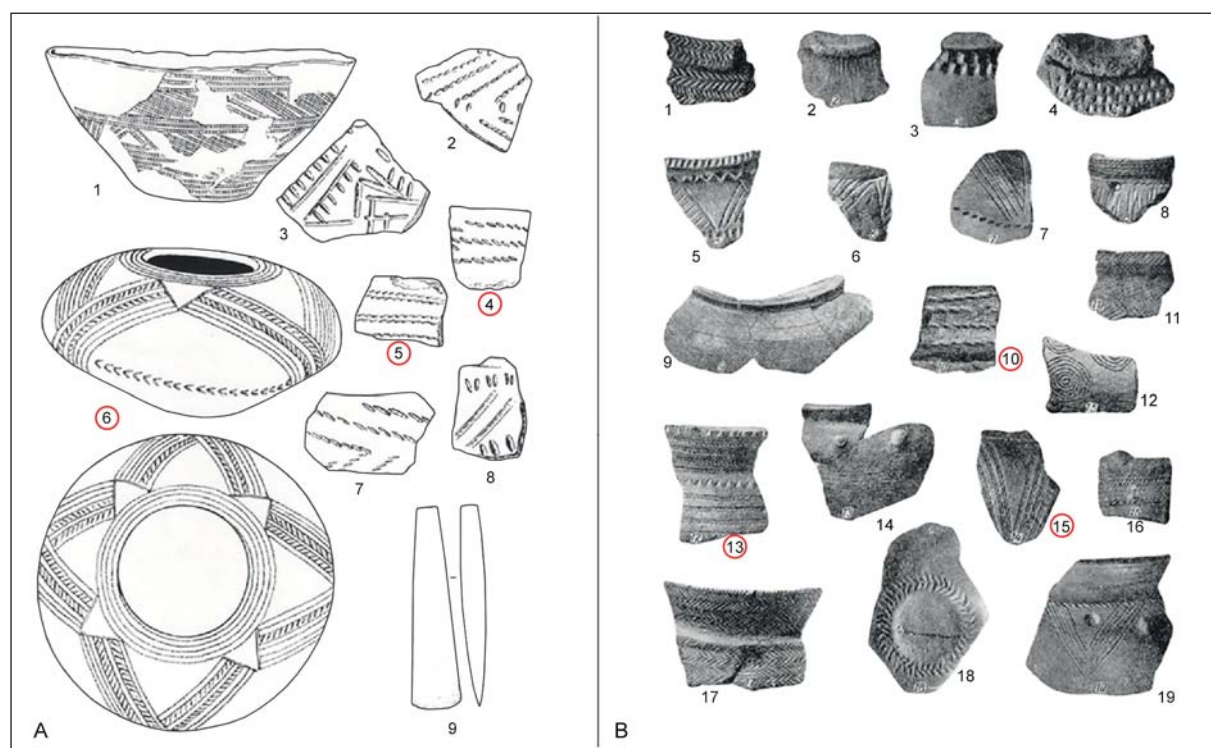


Fig. 2. A: Košice-Barca (Slovakia). Material from layer IV/1: 1–8: pottery and 9: copper flat axe; the decoration of sherds 4, 5 and vessel 6 is similar to sherds from Michajlivka (Ukraine). B: 10, 13 and 15 (after HÁJEK 1961; NOVOTNÁ 1970; LAGODOVSKA – SAPOŠNIKOVA – MAKAREVIČ 1962)

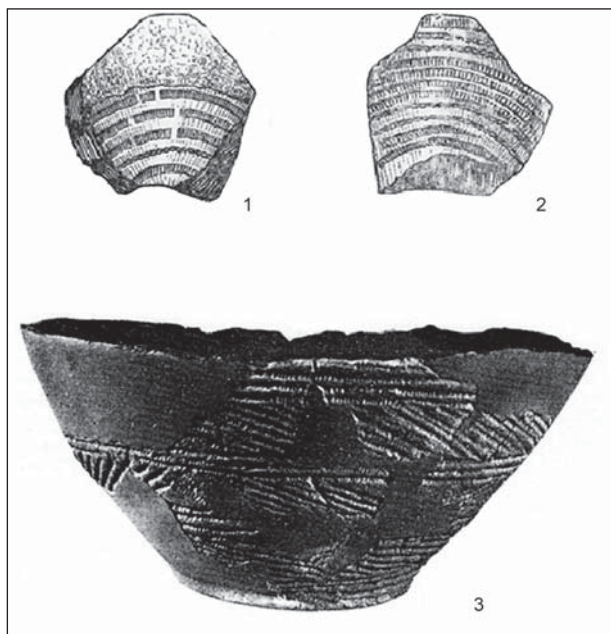


Fig. 3. Pottery with pseudo-corded decoration (*Wickelschnurkeramik*). 1–2: Michajlivka (Ukraine); 3: Košice-Barca (Slovakia) (after HÁJEK 1961; LAGODOVSKA – ŠAPOŠNIKOVA – MAKAREVIČ 1962)

respectively to the right, in the material from Košice-Barca the lower part of the vessel ornamented with a so-called false cord (*Wickelschnurtechnik*) (Fig. 3.3) was also found. This decoration is known to be found in the third upper layer of the settlement in Michajlivka (Fig. 3.1–2; LAGODOVSKA – ŠAPOŠNIKOVA – MAKAREVIČ 1962, tab. XVIII/10, 12).

A biconical vessel with a flattened base found in layer IV/1 in Košice-Barca is a rather exceptional find. Decorated with corded imprints and inclined cuts that, when seen from above, create the shape of a four-pointed star (Fig. 2.A:6). It is a rare find with only a few analogies in graves from the North-

Western Pontic region. These graves are considered by Y. N. Merpert (MERPERT 1974; IVANOVA 2013) to represent a specific Yamnaya cultural and historical entity, later named by T. I. Cherniakov as the “Late Yamnaya Budzhak” culture (CHERNIAKOV 1979). It is therefore the Yamnaya culture population, settled in the so-called “contact zone” in the area between the southern Bug, Prut and Danube rivers. It is evident in the ceramic repertoire, where the Carpathian-Balkan shapes are mostly present (Fig. 4.1, 2; IVANOVA 2013, figs 9–12).

When compared to the already mentioned biconical vessel with flattened base, identical in shape and ornamentation is a fragment of a vessel from a nearby site in Valaliky-Všechsvätých. It

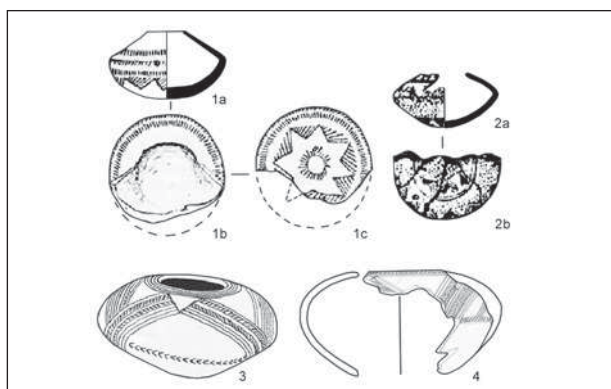


Fig. 4. 1a–c: Kurči (Ukraine); 2a–b: Svetly (Ukraine) – Vessels of the Late Yamnaya Budzhak culture; 3: Košice-Barca (Slovakia) and 4: Valaliky-Všechsvätých (Slovakia) – Vessels of the Yamnaya culture? (after IVANOVA 2013; BÁTORA 2016)



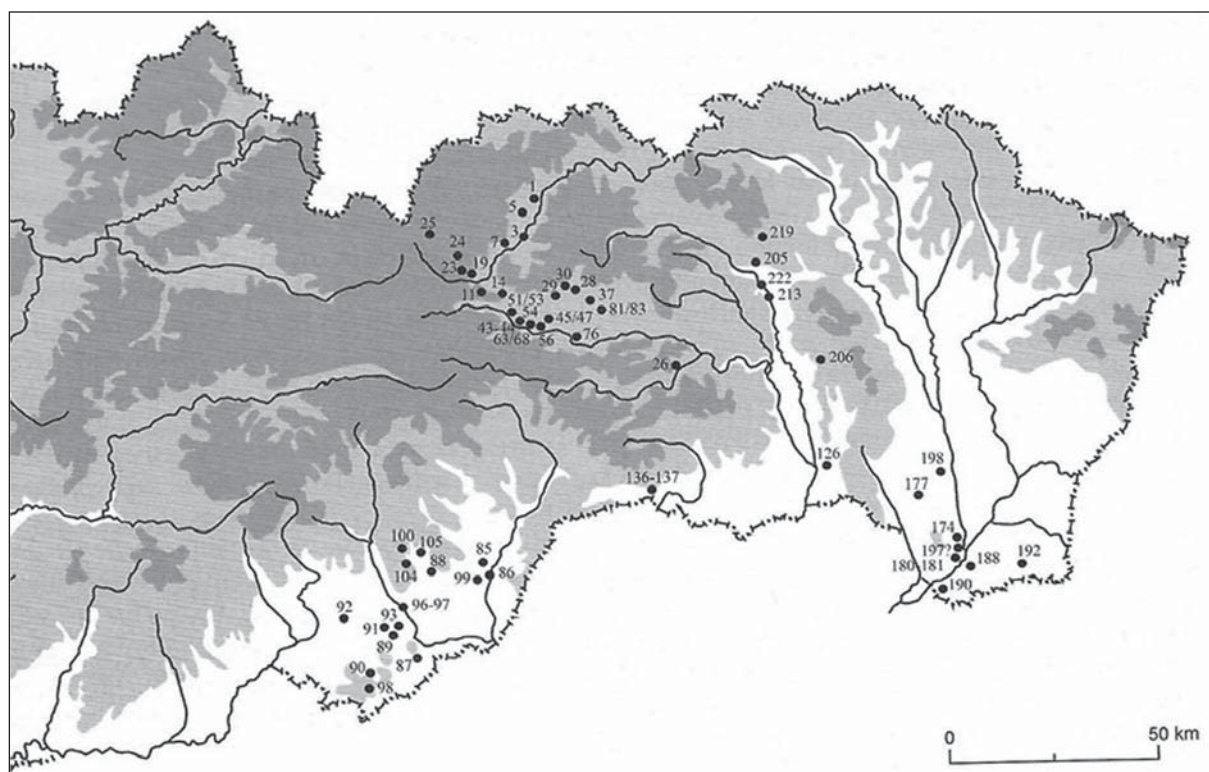


Fig. 5. Map of the Baden culture hill-top settlements in the Slovak part of Upper Tisa region (after HORVÁTHOVÁ 2010)

was found in secondary position during the excavation of a Slavic-Avar cemetery (ZÁBOJNÍK – BÉREŠ 2016) (Fig. 4.4). Incised decorations on both vessels, as well as twig-like ornaments are close to the Coţofeni culture ceramics. With uttermost certainty the corded ware ceramics of the Barca type is connected to the steppe population waves of the Yamnaya culture, entering more deeply into the northern Carpathian region. Because of this pressure, probably covering a vast area, specifically in lowlands, the Baden culture collapsed and survived only in mountainous and hardly accessible terrain, which was subsequently occupied by people from the less safe regions. There, they created virtually the first highlander civilization in the area of contemporary Slovakia (STRUHÁR 2015, 13). This is confirmed by a whole network of Late Baden fortified settlements situated on promontories, hilltops, and travertine terraces (Fig. 5). We encounter them in eastern (Spiš region, Slovenský kras – VLADÁR 1973a, 74, fig. 4; HORVÁTHOVÁ – FURMÁNEK 2005; NOVOTNÁ – SOJÁK 2013; SOJÁK 2015) as well as central Slovakia (Zvolenská kotlina – MALČEK 2015; Liptov – LICHARDUS 1962, 855; Turiec – HRUBEC 1970, 330–336; Gemer – NEVIZÁNSKY 1999). Surviving Late Baden groups appear also further in northern and northeastern Hungary, later named the Ózd group (the area of the Sajó river, the Bükk Mountains and Mátra) (KALICZ 1968, 102), and north of Carpathians in Lesser Poland, named the Pleszów-Zesławice group (KOZŁOWSKI 1968, 88; GODŁOWSKA 1973, 70).

Besides the mountainous regions, in these turbulent times, the population was also seeking refuge in caves (Fig. 6), mostly in Spiš (Čertova džura near Spišské Tomášovce, “Tunel and Biela jaskyňa” in Letanovce, “Tri skaly” in Smižany, “Puklinová jaskyňa” in Dreveník in Žehra and “Temná jaskyňa” and “Dvojvchodová jaskyňa” in Žehra – SOJÁK 2007, 36–37; VLADÁR 1973a, 77–82), but also in Slovenský kras (cave “Takáčova jaskyňa” and “Fajka” in Jasov – ŠIŠKA 1966, 51) and in Lower Poland (cave Mosur



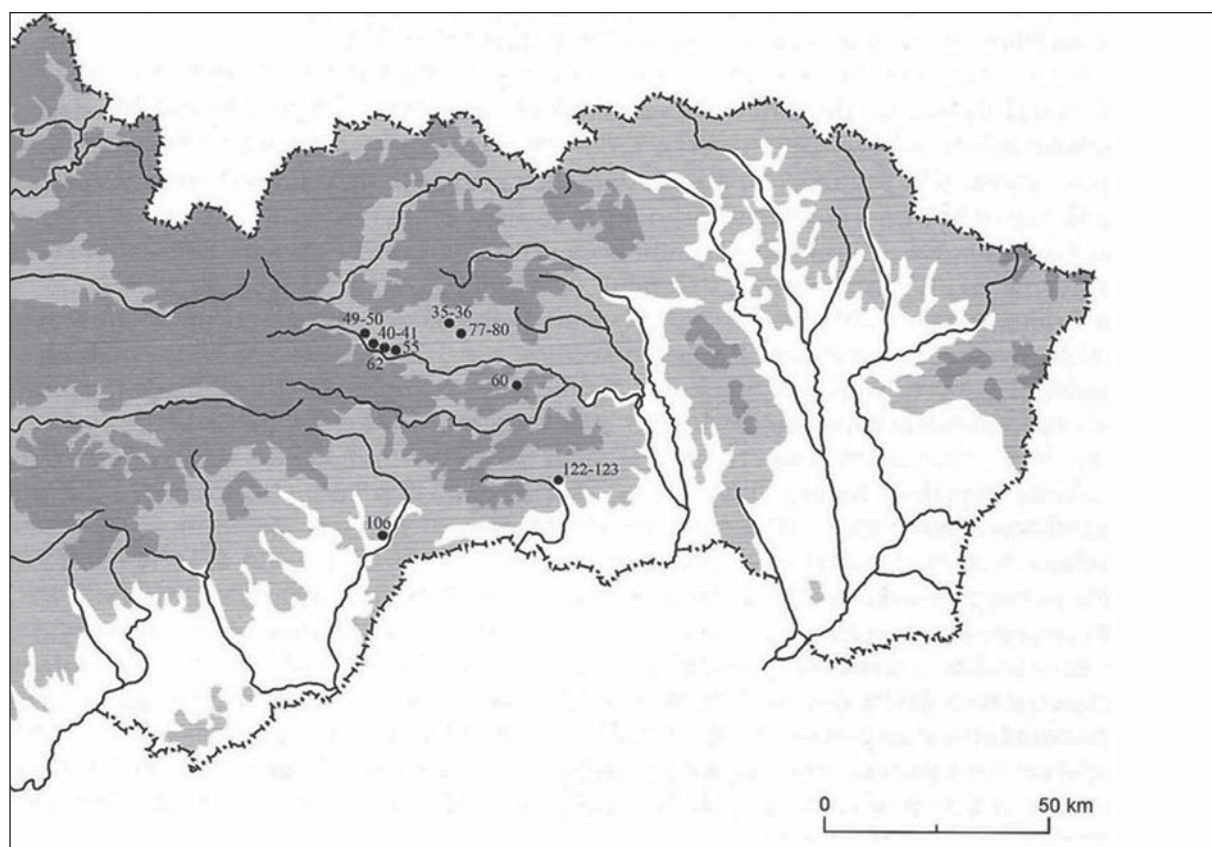


Fig. 6. Map of the Baden culture cave settlements in the Slovak part of Upper Tisa region (after HORVÁTHOVÁ 2010)

Stary in Grodzisko, cave Zdamenowa in Kobylany – GODŁOWSKA 1973, 72), which were intensively inhabited.

As it was already noted, at the fortified settlements of the late phase of the Baden culture, pottery decorated with corded ornament is known from the northern Carpathian region. It is remarkable that we encounter it in all regions with Late Baden settlements, but mostly in those that are located farther to the south and east (they are absent in Turiec). Their presence is significant mainly in Eastern Slovakia, in Spiš (for example, Hrabušice, Levoča, Spišské Podhradie, Letanovce, Žehra, Veľká Lomnica), in southern Slovakia, in Gemer (for example, Stránska, Zádielske Dvorníky), and in northern Hungary (Ózd, Tiszanagyfalu).

In Veľká Lomnica, besides the traditional corded ornament, shards decorated with the so-called “false corded ornament” (Wickelschnur) were found (NOVOTNÁ – SOJÁK 2013, obr. 57: 3a, b). This type of ornament was also found, as already mentioned, on the pottery from the layer IV/1 in Košice-Barca, for which analogies from the Yamnaya culture settlements are known in Michajlivka in the Ukraine (LAGODOVSKA – ŠAPOŠNIKOVA – MAKAREVIČ 1962, tab. XVIII:10, 12).

In the southern part of central Slovakia, in Gemer, the non-local pottery was most frequently found at the late Baden settlement in Stránska. It significantly differs in its technological, typological and ornamental attributes from local pottery (Fig. 7). Mostly it is pottery decorated with corded ornament or rouletting technique, which also evokes a corded ornament (HORVÁTHOVÁ – NEVIZÁNSKY 2017, 69). It is worth mentioning that this pottery was mostly found in the filling of ditch I, in the southwestern

part of the fortified settlement (HORVÁTHOVÁ – NEVIZÁNSKY 2017, obr. 14).

The occurrence of pottery decorated with corded ornament in the eastern part of the Great Hungarian Plain is often connected in scientific literature with the immigration of several generations of Yamnaya culture people from Eastern Europe and the North-Pontic region (DANI – HORVÁTH 2012; ECSÉDY 1979, 14, obr. 3; KALICZ 1999, 91, 92). Their former homeland was in the vast steppe lands between the Ural and the Danube Delta (RASSAMAKIN 1999; TELEGIN – MALLORY 1995). From the second half of the 4<sup>th</sup> millennium BC this half-nomadic people subsequently moved into the Carpathian Basin (DANI – HORVÁTH 2012, 147, 148).

This non-local pottery in Stránska is, however, not uniform. Shards differ from the pottery of Baden culture in their matrix as well as in ornament composition, which consists mostly



Fig. 7. Stránska (Slovakia). Pottery of foreign origin originating from the Late Baden culture settlement (after HORVÁTHOVÁ – NEVIZÁNSKY 2017)



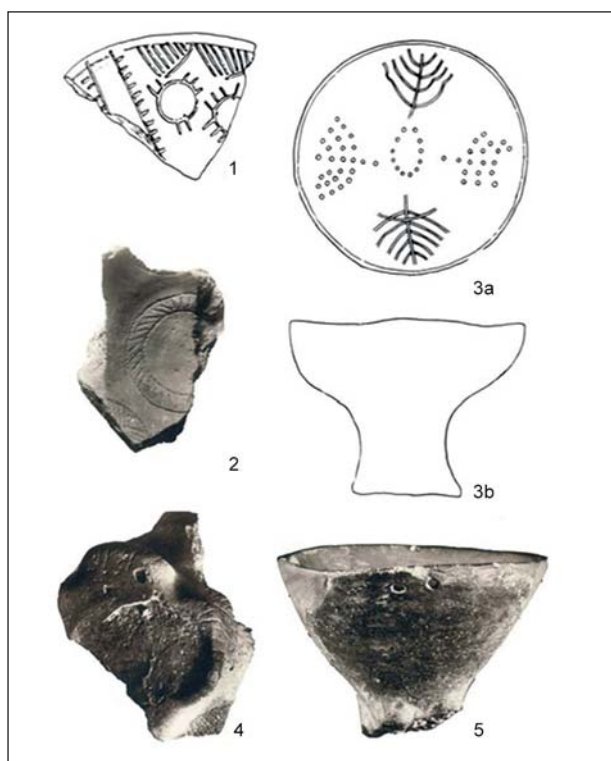
Fig. 8. Vessels showing Yamnaya culture typical features. 1: Koniusza, site 1 (Poland); 2–3: Smižany “Hradisko” (Slovakia); 4: Świete (Poland), site 11 (after WŁODARCZAK 2014; NOVOTNÁ – SOJÁK 2013)

of short and sharp furrows (Fig. 7.1; HORVÁTHOVÁ – NEVIZÁNSKY 2017, Figs 15:1; 16:1), and long and sharp furrows (HORVÁTHOVÁ – NEVIZÁNSKY 2017, obr. 15:15). Especially important for solving this problem are (mostly) stratified finds discovered under mounds of the Corded Ware culture, from south-eastern Poland, containing components of the Yamnaya-Catacomb cultures.

The first of them is grave 1149 from Świete, near the San river, where a pot with a pointed bottom was found (Fig. 8.4). Direct analogies could be found on sites of the Yamnaya culture in the area of the North Black Sea region (KOŠKO – KLOCHKO – OLSCHEVSKIJ 2012, obr.17/3; 75; WŁODARCZAK 2014, obr. 17/3). The second is a conical bowl from a disturbed grave in Koniusza; it has a thickened rim decorated in the upper part and on the rim with three chevron-like corded lines (Fig. 8.1). According to P. Włodarczak, they could be related to the North-

Pontic area (WŁODARCZAK 2014, 45). Rim shards from a similar vessel were found at Hradisko I in Smižany, the site of the Late Baden period (*Fig. 8.2–3*; SOJÁK 2001, fig. 9/2,3). E. Horváthová found analogies in the Gorod-Volyn group pottery of the Tripolye culture (stage CII) (HORVÁTHOVÁ 2010, 59). The third is grave 4 from Szczytna, with an outstanding grave assemblage containing mostly metal artifacts that have no analogies in the Corded Ware culture but are pointing to the North-Pontic area (CZOPEK 2011, 243–251; WŁODARCZAK 2014, 43, 45). A copper shaft-hole axe with flat upper face is exceptionally interesting. The axe is similar in shape to axes of the Baniabice type. Their design is quite old, typologically close to the second group of axes of the Maykop culture, according to S. N. Korenevskij's classification (KORENEVSKIJ 1981). The Yamnaya culture played the most important role in spread of the oldest copies of these axes in western direction. From the area of southeastern Poland this is the third example of shaft-hole, flat faced axes. Previously found axes from Rudna Mała and Muninare, however, do not come from clear stratigraphic contexts (GEDL 2000, fig. 2). Single finds of the Baniabice type from the northern Carpathian area are known from southwestern Slovakia (Dolný Pial – VLADÁR 1970, figs 1; 2; Radimov – FARKAŠ – PLACHÁ 2002, fig. 4/1) and northern Hungary (Kisbér – NOVOTNÁ 1957, tab. 1/2a, 2b).

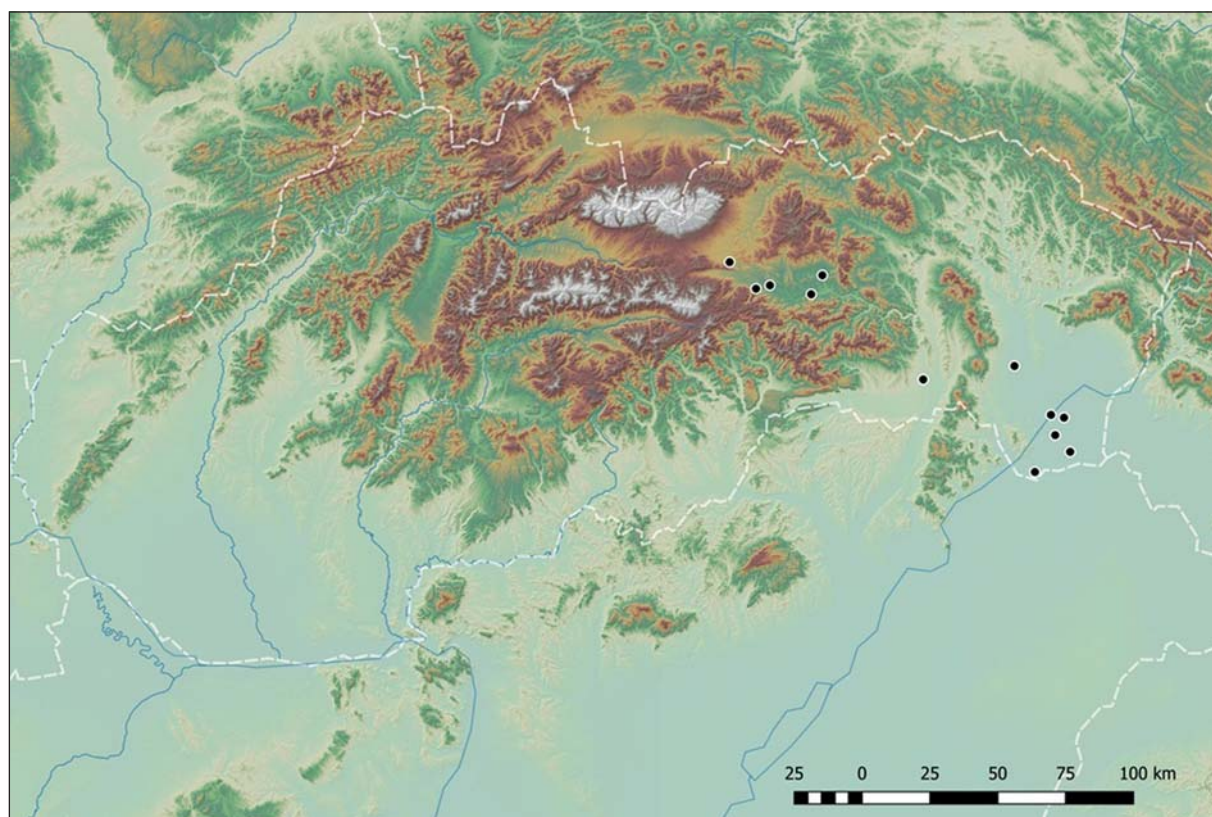
According to A. Koško, V. I. Klochko, and A. Olshevskij, the most probable route to southeastern Poland used by groups from the North Black Sea region was heading from southeast along the valleys of the Dniester and the San. A second route, heading along the valleys of the Siniuk and the South Bug should also be taken into account (KOŠKO – KLOCHKO – OLSHEVSKIJ 2012, 75). Besides the already indicated Danube route, the Yamnaya-Catacomb people, with high probability, could have entered into the north Carpathian zone by these two routes.



*Fig. 9. Artefacts of Kosihi-Čaka-Makó and Nyírség-Zátin culture from the Late Baden culture settlements in Eastern Slovakia. 1, 2, 4, 5 – Žehra-Dreveník; 3a-b – Vítkovce (after BÁTORA 2016)*

Apart from the material with cord-decoration, pottery of the Vučedol style, i.e. the Kosihi-Čaka-Makó and the Nyírség Zátin cultures was also found at settlements of the Late Baden culture (BÁTORA 1983, fig. 7). On Spiš, it was found at Gánovce, Vítkovice, and Žehra-Dreveník settlements, represented mostly by footed bowls with inner decoration (TOČÍK *et al.* 1970, tab. LXXXVII/1, 3; BÁTORA 1983, tab. III/2, Fig. 7/1-4; *Fig. 9*). Farther to the north, this influence was displayed in the area of Little Poland, where on the Brzezia site, in upper parts of the pit of the Baden culture, pottery of the Vučedol style was also found (GODŁOWSKA 1968, 109). In northeastern Hungary from the same site pottery of the Baden culture and the Makó group is known (KALICZ 1968, 57–58). Even at the Salgótarján-Pécskő site, for the first time in Hungary, vertical stratigraphy of both mentioned cultures was uncovered. Materials of the Baden culture features were in the lower layer, separated by a thin layer of soil “b” from the features of the Makó group (KOREK 1968, 58). In southwestern Slovakia, in Malé Kosihi,





*Fig. 10. Distribution map of the Nyírség-Zatín culture settlements with the occurrence of corded pottery in Eastern Slovakia*

Kosihy-Čaka-Makó culture finds were located directly on top of the Baden culture layer (TOČIK 1961, 19–24).

It looks like the eastern steppe communities played an important part in the formation of the Nyírség-Zatín culture, and it is mostly because of the geographical position they were most intensely present from all groups of the late Eneolithic cultural complex. On many sites of eastern Slovakia, the material of the Corded Ware settlement pottery and of the Nyírség-Zatín culture were found together (*Fig. 10*). Unfortunately, all these finds were discovered at the time of surface artifact surveys, eventually from layers (for example, Beša, Gánovce, Hriadky, Zatín, Žehra-Dreveník). Evidently, communities of Vučedol or those with steppe characteristics, as well as the Corded Ware culture caused the complete downfall of the last remains of the Late Baden culture in the examined area.

Long before excavations of solitary mounds in the northwestern part of Hungary (Rajka Modrovich puszta – FIGLER 1994, 22; Gönyü – BÓNA 1965, 40) and in eastern Burgenland (Neusiedl am See – RUTTKAY 2003, 347) it has been shown that the movement of nomadic tribes of the Yamnaya and Catacomb cultures at the end of the Eneolithic, in the Carpathian region was heading not only to the Upper Tisza valley, but also into the area of eastern Hungary, where the communities were heading along the Danube further in a northwest and west direction (*Fig. 11*). The excavation of mounds in Šurany in southwestern Slovakia (NOVOTNÁ – PAULÍK 1989, 368), as well as surface prospection in the southern Hron and Žitava valley are indicating that the above mentioned nomadic tribes were heading into the northern spurs of the Danubian Lowland (*Fig. 12*).



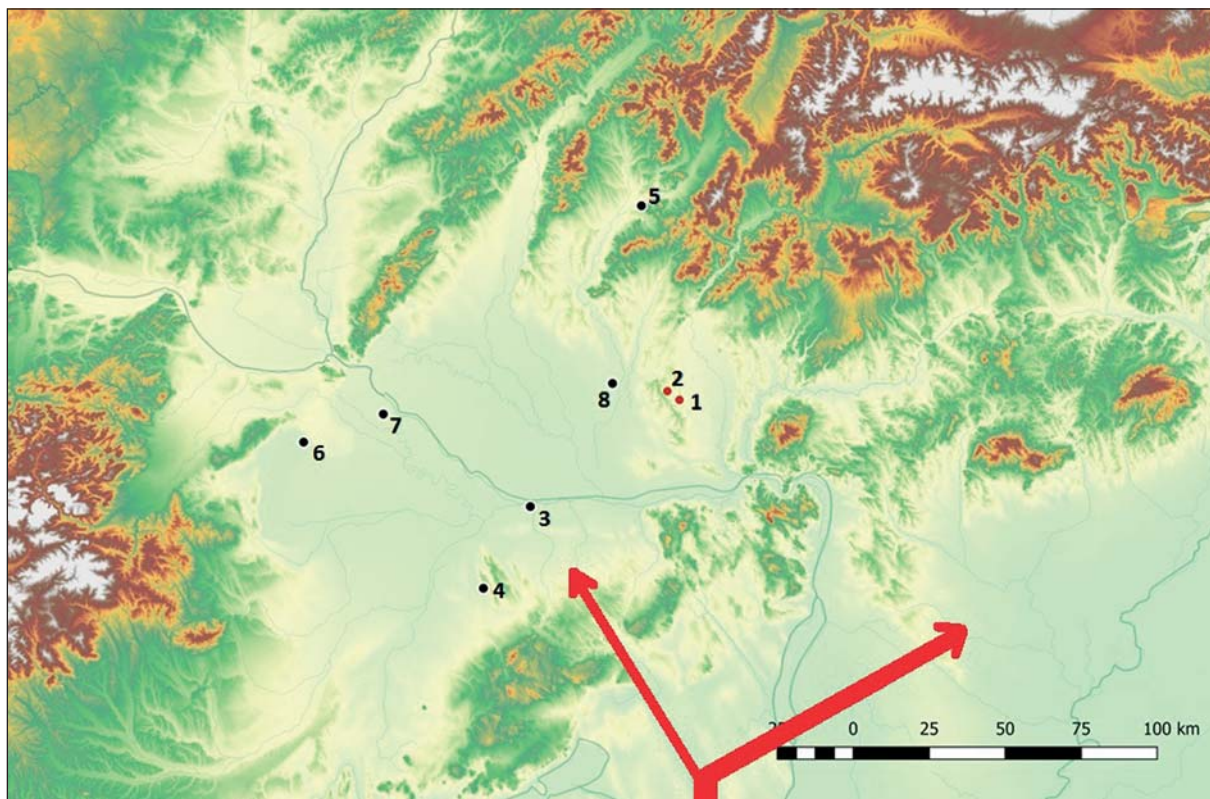


Fig. 11. Map of Middle Danube with tumulus graves from the Late Eneolithic and drawing of line of penetration of Yamnaya culture bearers into this area: 1: Čaka; 2: Dedinka; 3: Gönyü; 4: Kajárpéc; 5: Krásno; 6: Neusiedler am See; 7: Rajka; 8: Šurany; the Late Eneolithic tumulus graves were covered by the mounds of the Late Bronze Age Čaka culture (red dots: 1, 2)

In the central grave of the Šurany mound, which was disturbed by secondary opening, shards from at least six vessels of different sizes and shapes were found. The pottery has traits of pottery of the Balkan-Danubian complex of the Early Bronze Age and is close to the Somogyvár-Vinkovci group (Fig. 13. A: 1-4; NOVOTNÁ – PAULÍK 1989, 368–373). It looks like close analogies to some pottery from the Šurany mound can be found in the western part of Transylvania in Romania. For example, these are shards with slashed cordon coming upright from a simple handle. Similar pottery is known from a late Eneolithic mound of the Livezile group in Ampoița-Peret in Transylvania (mound II and IV) (CIUGUDEAN 1991, Abb. 22/8; 23/5, 20) and Livezile – “Dealul Sârbului” (Fig. 13.B: 5–9; CIUGUDEAN 1996, Fig. 21/12; Fig. 11.5–9). These mounds are dated to Early Bronze Age II and culturally belong to the Livezile group, which is a result of the overlaying of local substrate of the Coțofeni culture with elements of the Glină-Schneckenberg culture. In pottery from Šurany we can, similarly to the Sárrétudvari-Órhalom mound in the Upper Tisza valley, observe local elements represented by pottery close to the Makó culture (KULCSÁR – SZEVERÉNYI 2013, fig. 6:1,2) and foreign elements represented by pottery close to the Livezile group.

The presence of foreign pottery in Šurany, close to pottery of the Livezile group in western Transylvania allows us to assume it is a proof of similar mobility, which was, on basis of strontium and oxygen isotope analysis, uncovered among the population of the Livezile group and population of the Yamnaya-Catacomb cultures buried in the Sárrétudvari mound in the Great Hungarian Plain (GERLING – CIUGUDEAN 2013, 181–182). Besides the potential grasslands, they were attracted to the area of southwestern Slovakia (therefore, north of the Danube) mostly by the sources of non-ferrous metals like copper, gold, and silver

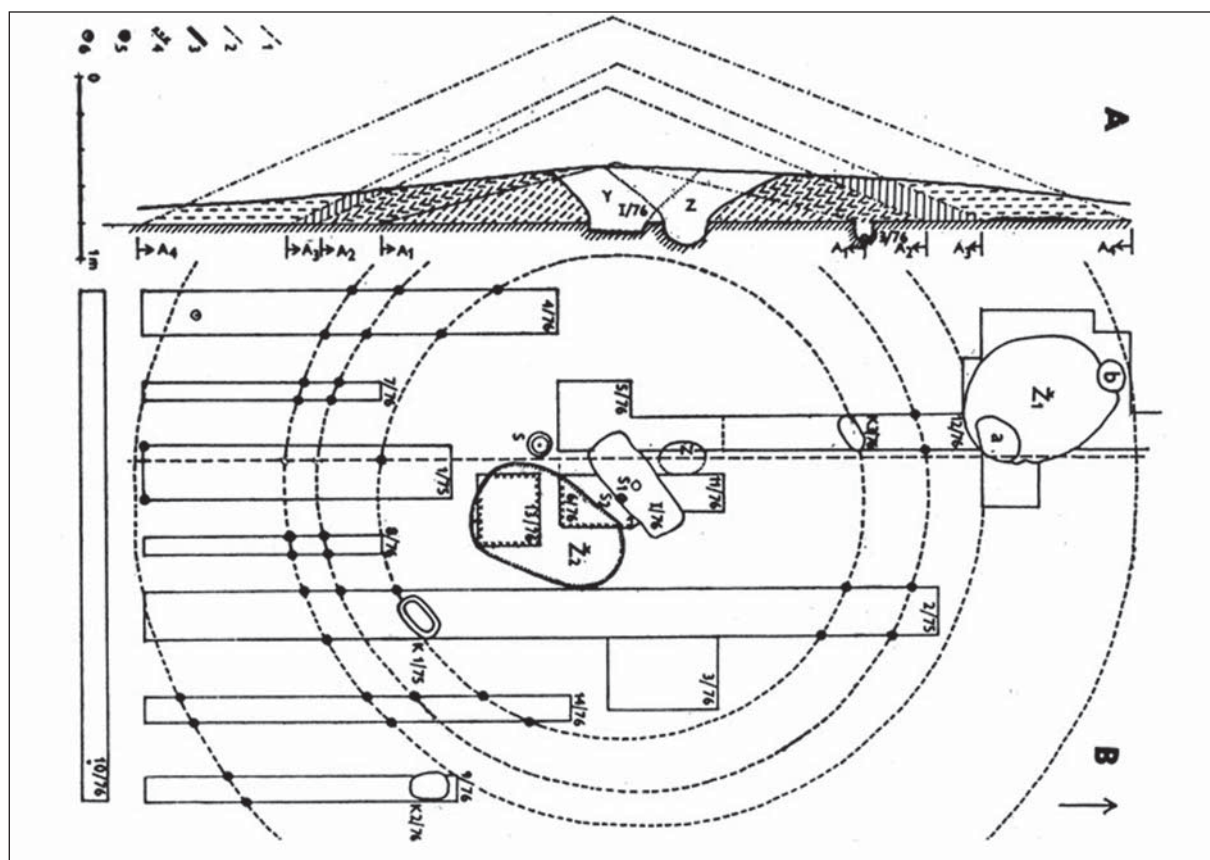


Fig. 12. Šurany (SW Slovakia). Cross-section and ground plan of tumulus of the Somogyvár-Vinkovci culture (after NOVOTNÁ – PAULÍK 1989)

located in the nearby central Slovakian volcanic mountains. Developed metallurgy in this region is suggested not only by the already mentioned metal artefacts, but also by the flat faced axe moulds of the Kozarac type from Nevidzany (BÁTORA 1982, fig. 1) and Veľký Meder (HROMADA – VARSÍK 1994, figs 1; 2/6). Axes of Kozarac type are exactly the type of artifacts that are typical for the Kosihy-Čaka-Makó and Somogyvár-Vinkovci cultures (BÁTORA 2006, 37). Their close connection to Eastern European communities is clearly documented here again.

The results of excavations of two earlier tumuli of Early Urnfield, Middle Danubian

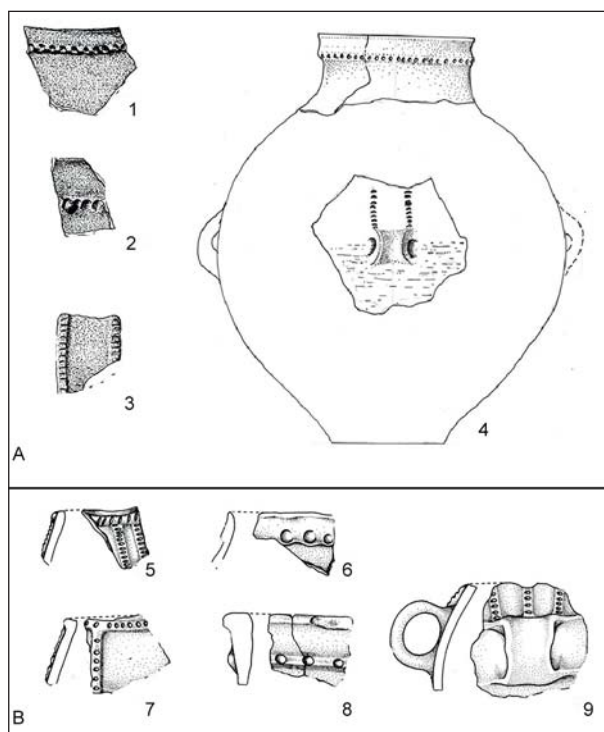


Fig. 13. A – pottery from central grave of tumulus of the Somogyvár-Vinkovci culture in Šurany (Slovakia); B – pottery from tumulus of the Livezile Group in Ampoița (Romania) (after NOVOTNÁ – PAULÍK 1989; CIUGUDEAN 1991)



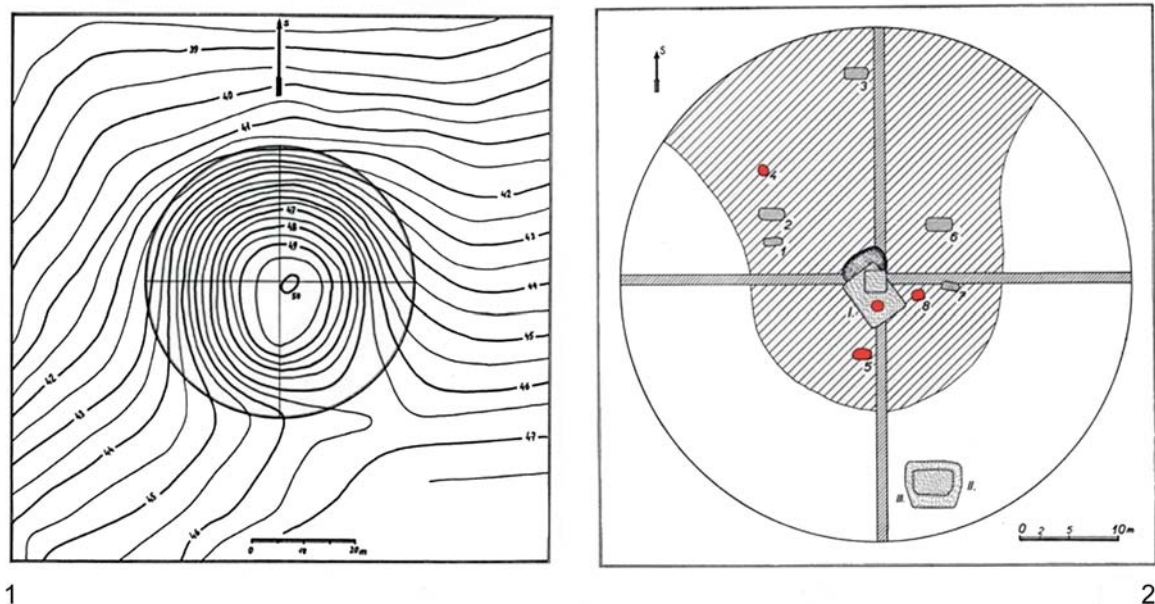


Fig. 14. 1: Čaka (Slovakia). The Late Bronze Age mound – contour plan; 2: Čaka (Slovakia). The mound ground plan (hatched area) originating from the Late Eneolithic Kosihy-Čaka-Makó culture, which laid under the Late Bronze Age mound; Late Eneolithic graves are marked in red (after Točík – PAULÍK 1960)

Culture from the Late Bronze Age in Čaka and Dedinka suggests that the Late Eneolithic tumulus grave uncovered in Šurany, in the eastern part of southwestern Slovakia, was not an isolated find. Closer

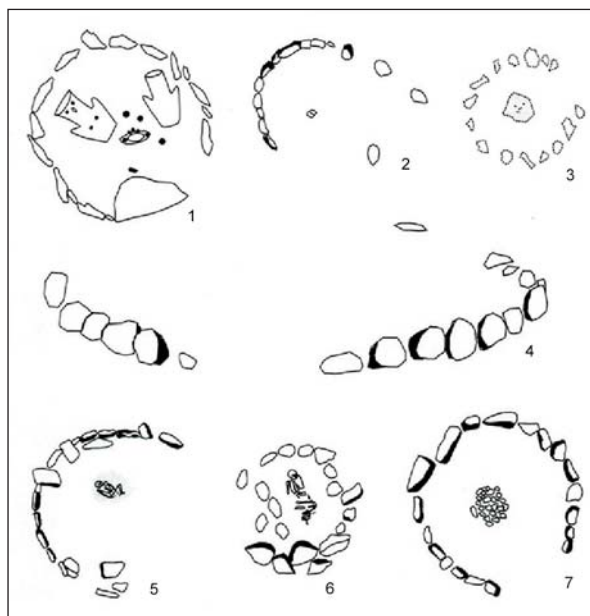


Fig. 15 Small mounds rounded by stone circles. 1: Center (Hungary); 2, 4–7: Michajlivka (Ukraine); 3: Krásno (Slovakia) (after VLADÁR – WIEDERMANN 2017)

examination of field documentation from Čaka revealed that a later mound of the Late Bronze Age was built over the older, Late Eneolithic tumuli of the Kosihy-Čaka-Makó culture, and of the Somogyvár-Vinkovci culture respectively. Its existence is supported by the circle of dark soil, which expands in northern direction (Fig. 14.1–2; Točík – PAULÍK 1960, figs 3–4). It is evident that this “expansion” is in fact an eroded layer, while this happened because the tumulus was built on the hill slope, which is very steep on the northern side. In the central grave 1, which was secondarily opened (robbed), beside Late Bronze Age pottery, Late Eneolithic pottery was also found. What is very important is that two of the cremation burials were located in the “dark circle area”. Only one of the Late Eneolithic graves was near the southwestern border of this dark soil circle (Točík – PAULÍK 1960, fig. 4).

Similarly to Čaka, under the layers of the Late Bronze Age mound, Late Eneolithic graves (dated to Kosihy-Čaka-Makó culture) were also found in

Dedinka (PAULÍK 1983, 34). This suggests that the later mounds of the Late Bronze Age were also built over the older Late Eneolithic tumuli.

Regarding the Kosihy-Čaka-Makó culture, in Krásno, district Partizánske in central Nitra river valley, most probably two smaller tumuli were also found. We can assume from the not very well-preserved documentation that these tumuli were bordered with a stone ring of unknown diameter (Fig. 15.3; VLADÁR – WIEDERMANN 2017, fig. 2:3) and were approximately 50 m apart (VLADÁR 1966b, 267–268), with cremation burials under them. They were probably smaller tumuli, similar to those of the Late Baden period, such as the ones uncovered in Včelince or Gemer, in the southern part of central Slovakia or in northern Hungary on the site Center (Fig. 15.1; KOVÁCS 2002, 9–12; BÁTORA 2011, 90).

Given their size and construction, the mentioned graves resemble graves with stone rings from Michajlivka in the North Black Sea region, known as “kromlechy” (Figs 15.2, 4–7; LAGODOVSKA – ŠAPOŠNIKOVA – MAKAREVIČ 1962, obr. 43 a 44). The main difference is that, contrary to those in the North Carpathian region, these graves have inhumation burials. It is, however, interesting that similarly to kromlech 1 in Michajlivka, footed bowl fragments with inner decoration were found in grave 1 in Krásno (VLADÁR 1966b, 267–268). From the area of southwestern Slovakia, footed bowls are known from few sites as well. Decorated on the inner side with corded ornament, they closely resemble the

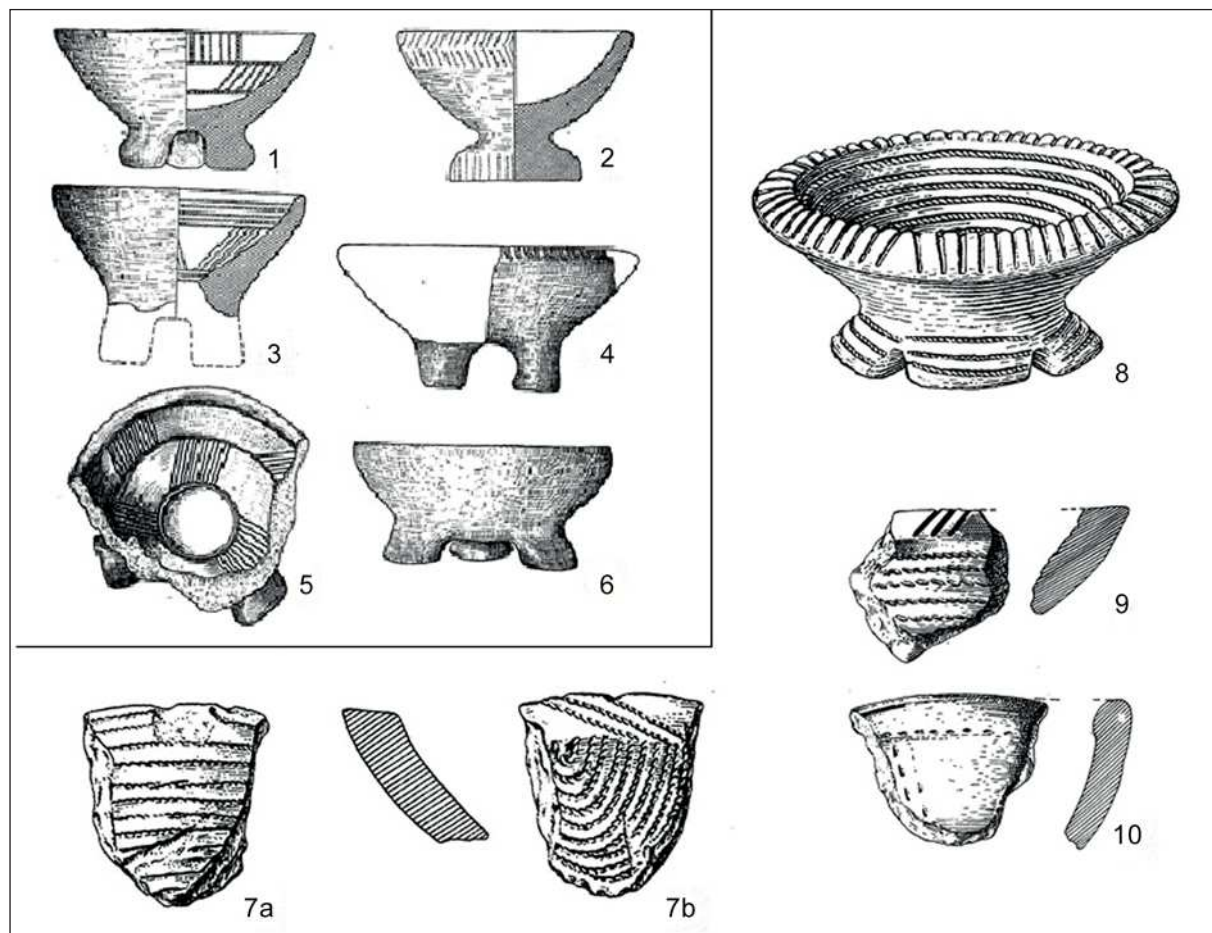


Fig. 16. Footed bowles, so called “kurilnice”. 1–6: Michajlivka (Ukraine); 7a–b: Dudváh, part Križovany nad Dudváhom (Slovakia); 8: Iža (Slovakia); 9–10: Branč (Slovakia) (after LAGODOVSKA – ŠAPOŠNIKOVA – MAKAREVIČ 1962; TOČÍK 1963; VLADÁR 1973b)



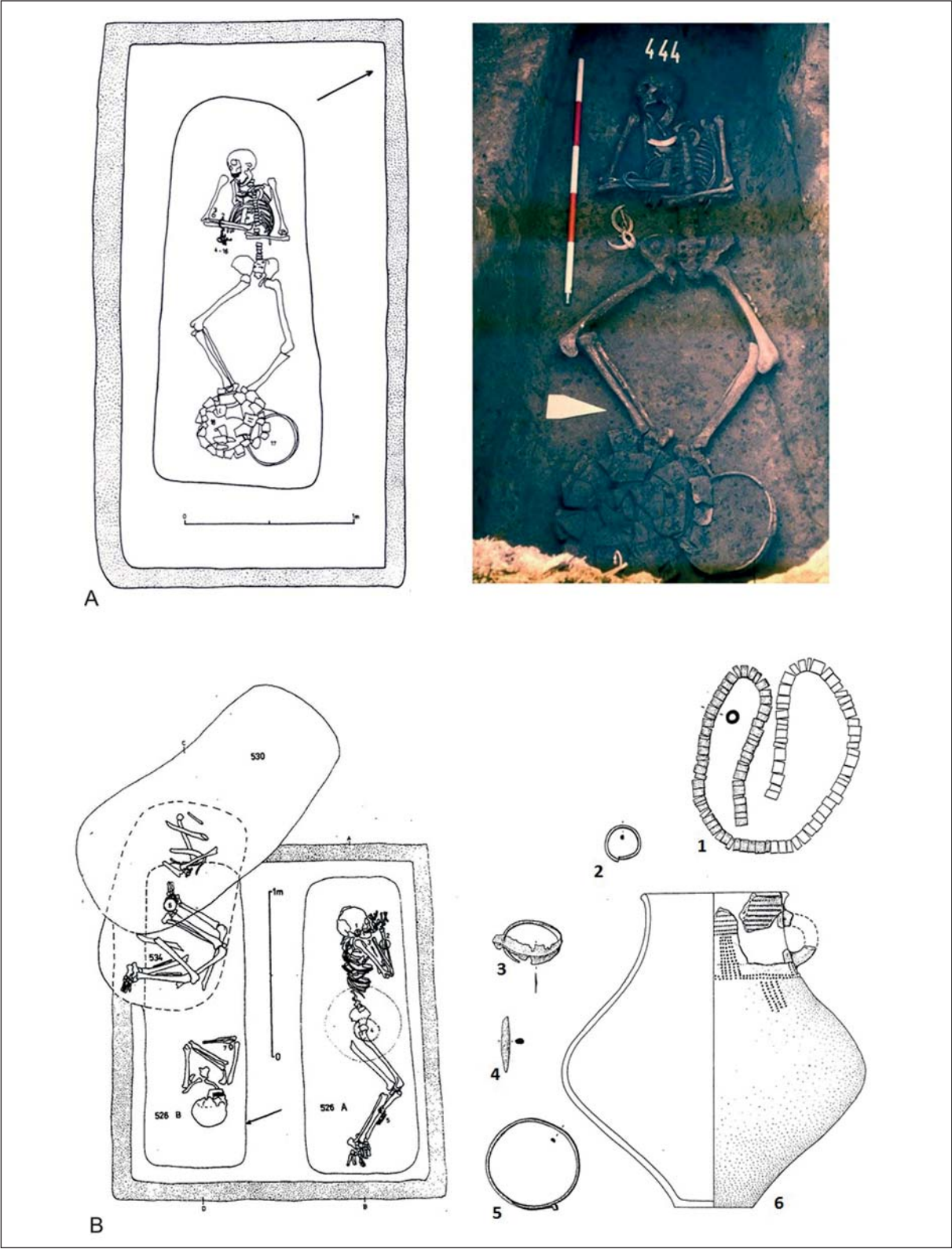


Fig. 17. Jelšovce (Slovakia). Graves of the early phase of the Nitra culture.  
A: grave 444; B: grave 526 (after BÁTORA 2000)

bowls („kurilnice“) from Michajlivka (Fig. 16.1–6). These are bowls from Branč (Fig. 16.9–10; VLADÁR 1973b, obr. 70), Križovany nad Dudváhom, and Iža (Fig. 16.7a–b, 8; TOČIK 1963, obr. 6:10; 9:7a–c).

Building the tumuli over the cremation burials of Kosihy-Čaka-Makó and Somogyvár-Vinkovci could be considered as hybridization of the funerary rite. Cremation could be seen as an Inner Carpathian element, while the tumuli could be considered a steppe element. This so-called “kurgan effect” could be connected to the last wave of the Yamnaya culture, during which its bearers migrated at the end of Eneolithic period into the northwestern Balkans and to the northwestern part of the Carpathian Basin.

I assume that, as it was pointed out by R. Harrison and V. Heyd, the custom of burying under mounds could not be seen in the period under study as a manifest of social differentiation and power of a leading social group, but as an expression of existing contacts with Eastern European population of the Yamnaya culture (HARRISON – HEYD 2007, 194, 196). This is also true for the area of the Middle Danube.

Regarding the discussed topic there is another point of interest. In cemeteries of the Early Bronze Age in the North Carpathian area, we sometimes encounter individuals buried in the so-called frog position. This is clearly documented by grave 444 from Jelšovce in southwestern Slovakia, which had a wooden, house-like, rectangular construction. The position of the skeleton as well as the construction of the grave is typical for burials of the Yamnaya culture (Fig. 17.A; BÁTORA 2000, fig. 411). Alongside the North Black Sea region, we encounter it in neighbouring eastern Hungary (for example Kétegyháza, tumuli 3, grave 6 – ECSÉDY 1979, fig. 10). The house-like construction, but of square layout, was also found in grave 525 at Jelšovce cemetery (Fig. 17.B; BÁTORA 2000, fig. 491). It also belonged to the Nitra culture. It is remarkable that under the grave filling over the skeleton A, a big bi-conical one handled vessel decorated with horizontal band made of false corded ornament (Wickelschnurkeramik) was found (Fig. 17.B:6; BÁTORA 2000, tab. 45:12). It is similar to one vessel found at the Michajlivka settlement of the Yamnaya culture (Fig. 3.1,2; LAGODOVSKA – ŠAPOŠNIKOVA – MAKAREVIČ 1962, tab. XVIII:10, 12).

We can rightly assume that further excavation will bring relevant results and will maybe confirm an even more intense influence of the people of the Yamnaya culture on the culture-historical development at the end of Eneolithic and the beginning of Early Bronze Age in the northwestern part of the Carpathian Basin.

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## **PART #3**

**Interactions north of the Carpathians and into the Corded Ware**





# Yamnaya, Corded Wares, and Bell Beakers on the move

VOLKER HEYD

## Abstract

*Mobility and migrations are key factors for understanding cultural change. Since the advent of mobility isotopes and especially ancient DNA studies, this fact is in no prehistoric periods so obvious as in the Early Neolithic of the 7<sup>th</sup>/6<sup>th</sup> millennium BC and the Copper Age/Early Bronze Age transition of the 4<sup>th</sup>/3<sup>rd</sup> millennium BC. However, especially for the 3<sup>rd</sup> millennium BC, there is no consensus on the scale, size, extent, directions, and speed of events. We likewise lack good conceptualisations and explanations for the mechanisms behind people moving. Here, an attempt is being made to describe essentials of four events in which archaeology and genetic studies regard recognisable quantities of peoples moving westwards: 1) Yamnaya; 2) Early Corded Ware; 3) Later Corded Ware; and 4) 'steppe' Bell Beaker. Emphasised is the importance of the geography in the understanding of regional transmissions. Particularly discussed are the roles of versatile/volatile boundaries of the Eastern European forest-steppe region between the Dnieper and Dniester rivers for the formation of Corded Ware, and of the Central European Upper Rhine river region in the border triangle of France, Germany and Switzerland for 'steppe' Bell Beaker users. Highlighted are also possible origins of the typical gender-differentiated burial custom of Corded Ware and Bell Beaker cultures in the north-Pontic Zhivotilovka-Volchansk group; the importance of Bohemia and the Elbe river in the earliest spread and first consolidation of Corded Ware users; and the 'Beakerisation' of central and southern France rather happening from the east than from the Iberian peninsula.*

**Key words:** Cultural transmissions, European river systems, boundaries, corridors, migrations

## A) Introduction

Since the three ancient DNA (hence aDNA) papers published in Nature in 2015 (ALLENTOFT *et al.* 2015; HAAK *et al.* 2015) and 2018 (OLALDE *et al.* 2018), virtually every prehistorian is aware of the importance of the sequence Yamnaya – Corded Wares – Bell Beakers in an ethnic, social and cultural upheaval covering much of Europe in the 3<sup>rd</sup> millennium BC. While there can be no doubt that this millennium has seen lots of people being on the move, there is however no consensus on the scale, size, extent, directions and speed of the events. Symptomatic for this situation is the discussion about whether the term of 'mass migrations' is appropriate however without explaining the demographics and defining from which moment 'mass' is really applicable (FURHOLT 2018). More speculation than proper modelling also refers to the triggers, mechanisms and ideologies that facilitate these events. What is clear, nevertheless, is that we are dealing with a complex interplay of three novel, international cultural complexes – Yamnaya, Corded Wares, Bell Beakers – against the background of a set of 'indigenous' societies being genetically the descendants of 'Early Neolithic farmers' mixed with various degrees of so-called 'Western Hunter-Gatherer' ancestry. Culturally, post-Michelsberg / post-Baden / late TRB / Globular Amphora / late Trypillia-related populations figure prominently for much of Europe east of the Rhine river. Accordingly, and to simplify, this contribution aims to...

- 1) bring latest archaeology and (published) genetics evidence together;
- 2) highlight the geography, regional transmissions, and important role of frontiers;
- 3) evaluate, in a concise manner, potential triggers, mechanisms and ideologies; and
- 4) assess the overall role of migration and mobility.

By dividing the events into three different but partially overlapping stages, linked with three different geographical zones across eastern and central/western Europe, it attempts to shed light on the overall picture (Fig. 1).

Terminology and its proper application are difficult in these days. Naturally, one is educated to avoid conflating the infamous “Köpfe und Töpfe” (the German equivalent to the British “pots and people”). However, since the advent of aDNA studies, it is becoming more and more difficult to draw this line, as the most recent aDNA results actually tend to confirm the connection, especially in the 3<sup>rd</sup> millennium BC. For the time being, one looks out more for the exceptions, i.e., when Yamnaya or

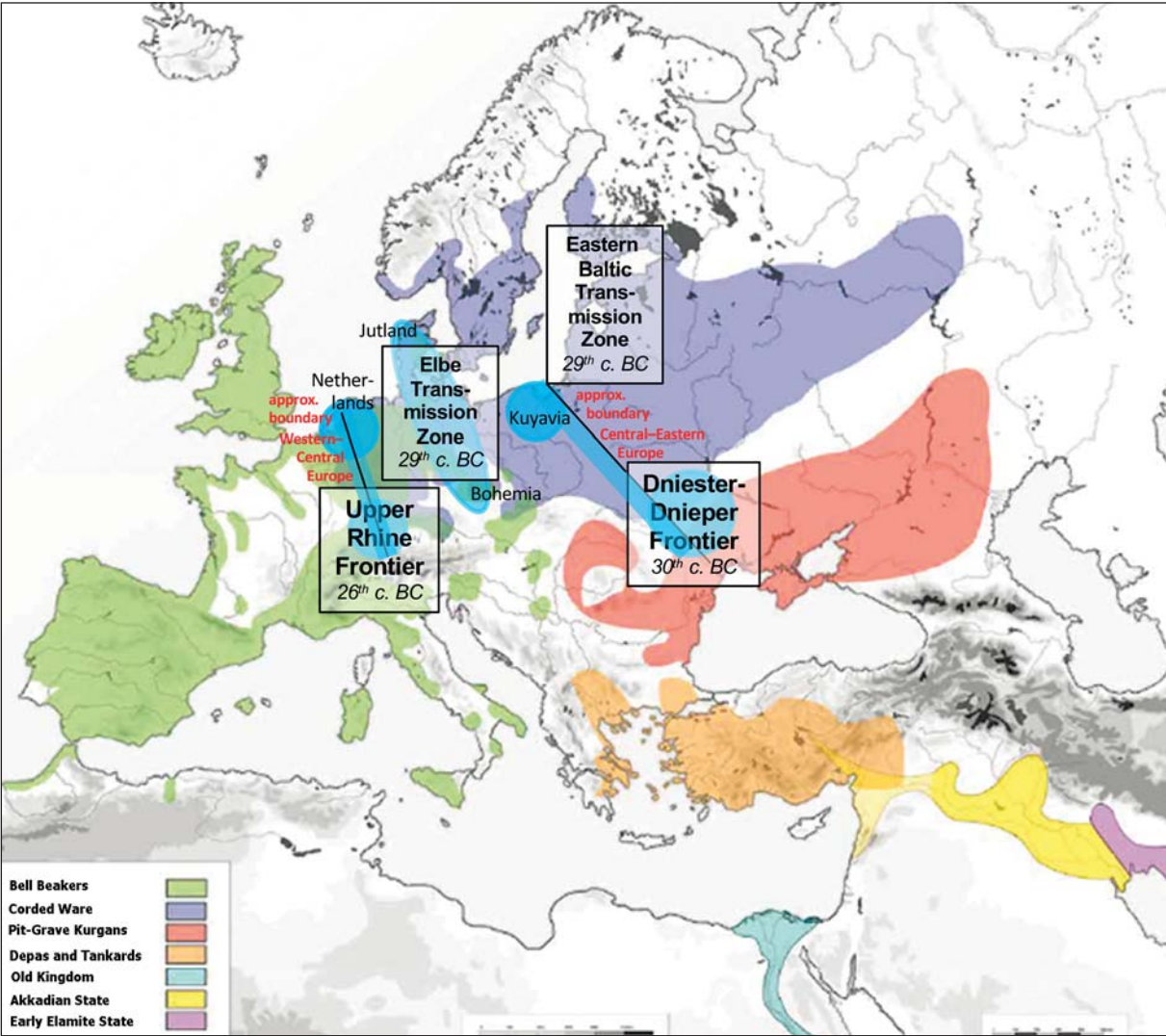


Fig. 1. East to West regions of 3<sup>rd</sup> millennium BC transformations and their interrelations:  
1) the Dnieper-Dniester interfluvial frontier; 2) the Elbe river and Eastern Baltic transmission zones;  
3) the Upper Rhine river frontier (background map after Risch et al. 2015, Fig. 2)

Corded Ware graves and individuals become known without steppe ancestry and subsequently exposes these findings. Nevertheless, for the sake of clarity, I would like to continue to differentiate between archaeological cultures and biological populations, in the same way than one can distinguish between identity and ethnicity. I will therefore speak about an international Yamnaya, Corded Wares and Bell Beakers complex with its regional cultures / cultural groups, however also about the users of Yamnaya burial customs, users of Corded Ware pottery, users of Bell Beaker vessels, etc., in the hope to herewith find a good compromise and give a direction.

### B) Yamnaya people on the move (from 3100–3050 BC)

The formation of Yamnaya proper (*nota bene*: not Repin as a potential forerunner) happens in a relatively short period at the end of the 4<sup>th</sup> millennium BC. At approximately the same date, or shortly after, we also see earliest Yamnaya kurgans being erected and burials placed in the plains northwest of the Black Sea. Besides occupying the proper steppe stripe immediately along the Black Sea coast, and eventually here forming the special Budzhak group (IVANOVA 2014; 2015), we also see their users moving northwest and northwards along the Prut and Dniester valleys into a more forest-steppe environment. The research results of a recent Ukrainian-Polish expedition have demonstrated Yamnaya burials been entombed at around 3000 BC near Yampil town (WŁODARCZAK 2017). Overall, they reach their northernmost range

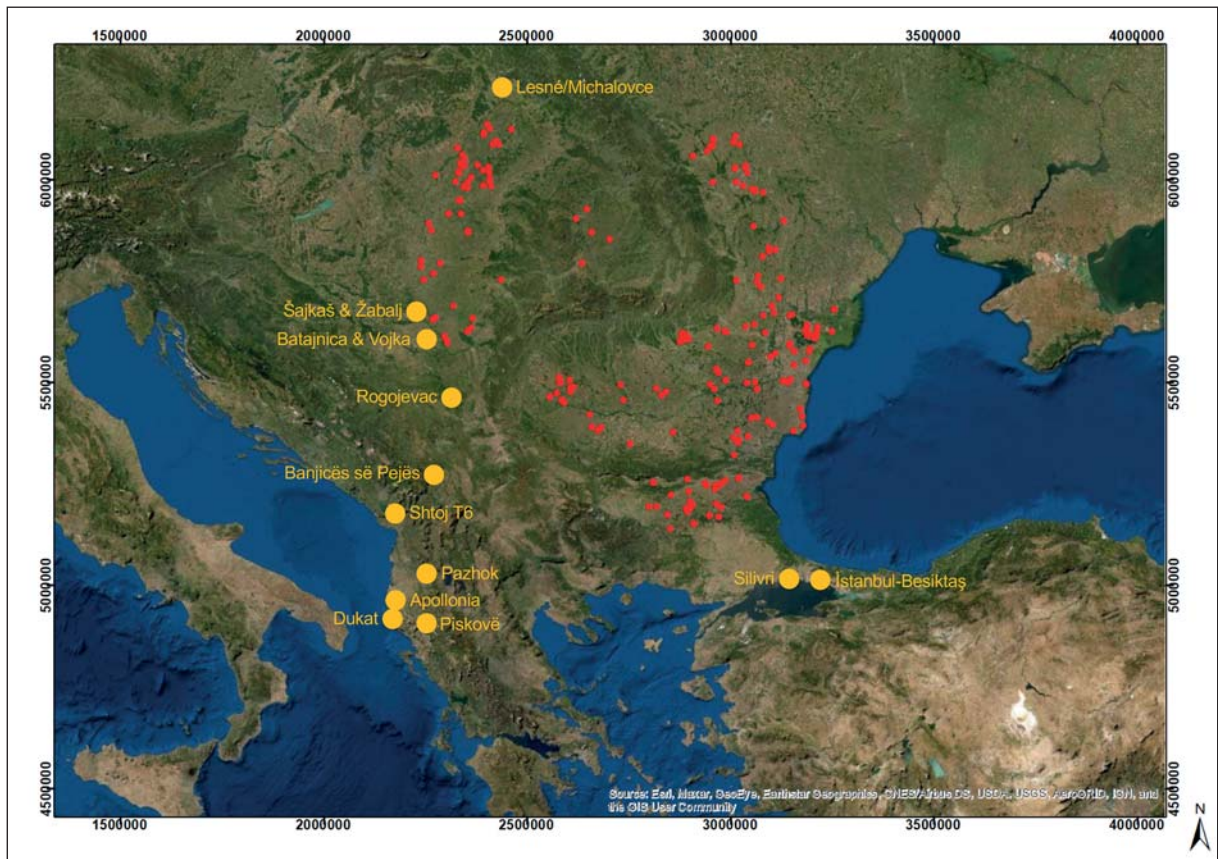


Fig. 2. Map of excavated Yamnaya mounds in Southeastern Europe (after PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020), with border/outlier examples, some with questions marks, additionally drawn in and highlighted (courtesy Henry Webber, Cirencester / UK)



short of Chernivtsi city in the historical region of Bukovina. The same encroachment is also visible for the landscapes around the Dnieper river so that Yamnaya kurgans and their typical burials are roughly found as far north as the city of Kiev (MERPERT 1974, fig. 1; KAISER 2019, 24ff).

From this earliest expansion onwards, Yamnaya people also included the steppe landscapes west of the Black Sea, Southeastern Europe, into their roaming zones (*Fig. 2*). Currently, indications on the beginnings of Yamnaya in Romania (PREDA-BĂLĂNICĂ – FRÎNCULEASA – HEYD 2020; DIACONESCU 2020) and Bulgaria (ALEXANDROV 2020) are indistinguishable, within the statistical limitations of radiocarbon dates, from those in Hungary (DANI 2020) and Serbia (KOLEDIN *et al.* 2020). It thus appears they moved in one go to the western end of the Eurasian steppe belt at the Tisza river. Being well adapted to the steppe environment in terms of their economy and lifestyle, it was consequently the orthodoxy (including for myself) that their burials could only be found within the limitations of the steppe corridor. However, more recently, we are getting exciting information on Yamnaya-related kurgans and burials south of the steppes in Eastern Thrace (Turkey) and southern Serbia/Kosovo/Albania. These are better linked to Yamnaya intrusions than burial mounds, cord decorated potteries, stone and cooper battle axes, and anthropomorphic stelae, being rather generic and culturally unspecific. A similar scenario could exist for regions further to the west, northwest, and north, across the Tisza, where also interaction seemingly took place and local reactions in the same forms are visible in the records.

Possible triggers and mechanisms for this Yamnaya westwards migration (and mirroring contemporary eastwards migration to the Altai and beyond in form of the Afanasievo culture) were already expressed in FRÎNCULEASA – PREDA – HEYD 2015, 84–86, fig. 18 and HEYD 2019, 127–128. In a nutshell, it is a socio-economic model based on the introduction of the key innovation ‘wheel and wagon’ against the background of climate and ecological change, i.e., decreasing precipitation and steppe aridisation. This led a newly formed but rapidly expanding society, probably stemming from a steppe population subgroup, to become cattle herders and pastoralists, if not eventually the first true nomads for some sections of society. Their constant search for green pastures for the well-being of their animals, as their major source of subsistence, subsequently forced them westwards. That climate and environmental change played a key role in events is also indicated by the fact that the centuries shortly before and around 3000 BC witness a series of cultural changes and population movements across Europe. The most important of these is the expansion of Globular Amphora culture to both east and west (SZMYT 2018; 2021, this volume; WOIDICH 2014). No coincidence, strange Y-chromosome bottleneck effects, not yet fully explained, also seem globally to have happened around the same time (POZNIK *et al.* 2016; ZENG – AW – FELDMAN 2018). Besides our socio-economic model, the idea that chiefs decide on, and charismatic leaders direct migrations of whole segments of a society at times of crises, with rising levels of conflict and pressure from neighbours, is plausible too (ANTHONY 2020). Pastoralist societies might even be particularly prone for such, as written history has proved many times. The recently expressed idea of an ‘ideology of travellers’ in 3<sup>rd</sup> millennium BC Europe (see WENTINK 2020, 239–247) might add another momentum to possible triggers and mechanisms.

### **C) The first regional transmission: The Dniester-Dnieper rivers frontier and the emergence of the Corded Ware cultural complex (2950–2750 BC)**

All recent Corded Ware aDNA/archaeology publications (JURAS *et al.* 2018; MALMSTRÖM *et al.* 2019; LINDERHOLM *et al.* 2020; FURTWÄNGLER *et al.* 2020; SAAG *et al.* 2020; EGFJORD *et al.* 2021; HAAK *et al.* in press; PAPAC *et al.* 2021) point to an emerging paradox: While Corded Ware burials, particularly those dating to 2900–2700 BC, always display a high degree of steppe ancestry (with a few nearly

100%) only a fraction (actually two of them) so far have the typical Y-chromosome of Yamnaya, DNA haplogroup R1b-Z2103. The majority of Y-chromosomes are of the distinct R1a type (almost all of M417 and Z282), while also R1b is represented, albeit with L51 and U106. Q1b and I2a only play minor roles, with I2a burials mostly being rather late, geographically peripheral, and burial custom -wise non-standard. This can only mean that the vast majority of Corded Ware users are not direct descendants of Yamnaya peoples but of other steppe populations. These are still rich in steppe ancestry but with divergent Y-chromosome signatures. Yamnaya burial customs are nevertheless the best inspiration for some of the key features of early Corded Ware burials (*Fig. 3*): i.e., mounds; the idea of the individual; east-west orientation; and supine upper body (see FURHOLT 2019, legend of *Fig. 1*). The same is true, as one may want to infer, for their pastoral practices and rather mobile way-of-life. However, other important features do not really fit, such as gender differentiation; grave equipment rules; and weapon display. Also, Corded Ware users never took over the peculiar Yamnaya hair fashion, and the silver hair rings it is indicated with, so widely distributed at the lower Dniester, along the Danube, in the Balkans and the Carpathian basin (KAISER 2019, fig. 125). So, Yamnaya does not completely stand aside when it came to the formation of early Corded Ware. However if Yamnaya is not in the driving seat, who was?

	<b>Corded Ware (early)</b>	<b>Yamnaya</b>	<b>possible background of CW features</b>
<b>SGBR (FURHOLT 2019)</b>			
Single burial in crouched position	X	supine, flexed	Zhivotilovka
Strict Orientation Rules	X W-E/E-W	X only W-E	
Gender differentiation by body placement	X	No	Zhivotilovka ?
Burial mound	X (small)	X (big)	5 <sup>th</sup> millennium BC
Prominence of drinking vessels / cord-decorated beaker	X (infrequent in early)	rare	Budzhak ?
Prominence of weapons in male graves	X (infrequent in early)	rare	
<b>Extras</b>			
Steppe ancestry	X (+ ENF/WHG)	X	post-Stog
Grave-pit form	oval	rectangular	
Chamber	ignored	developed	
Solid pit cover	No	wooden beams	
Ochre	rare	X	7 <sup>th</sup> millennium BC
Hair fashion / hair rings	No	X	Caucasus
Bone / tooth / shell jewelry	X (infrequent)	rare	

*Fig. 3. Corded Ware versus Yamnaya: What do they have in common? What is structurally different?*

The answer is probably a mixture of various peoples with different regional backgrounds. This is not only implied by the variety of Y-chromosomes but also through cultural aspects. Furthermore, the above preconditions allow us to pinpoint the geography involved:

Firstly, it rather seems not to be the proper steppe, as by 3000 BC the process of Yamnaya homogenisation is well underway, including brotherhood-like uniformity of what becomes the typical Yamnaya Y-chromosome. This development leads, as shown, to a different trajectory. There is, however, the facet of the cord-decorated beaker vessels (*Figs 4–5*), widely distributed in the Budzhak group and



Fig. 4. Examples of cord-decorated beakers in the Yamnaya Budzhak group and from Yamnaya graves in Romania and Bulgaria: 1. Trapivka UKR, K6, G20; 2. Butor UKR, K9, G3; 3. Kamenka UKR, K1; 4. Ploiești RO, K2, G21; 5. Ploiești RO, K2, G20; 6. Trapivka UKR, K4, G5; 7. Vetrino BG, K7, G3; 8. Istochne UKR, K12, G5; 9. Kurci UKR, K3, G11 (nos. 1–3, 6, 8–9 are taken from S. IVANOVA, *passim*; nos. 4–5 from FRÎNCULEASA – PREDA – HEYD 2015; no. 7 from ALEXANDROV – SLAVCHEV – TONKOVA 2021; not scaled)

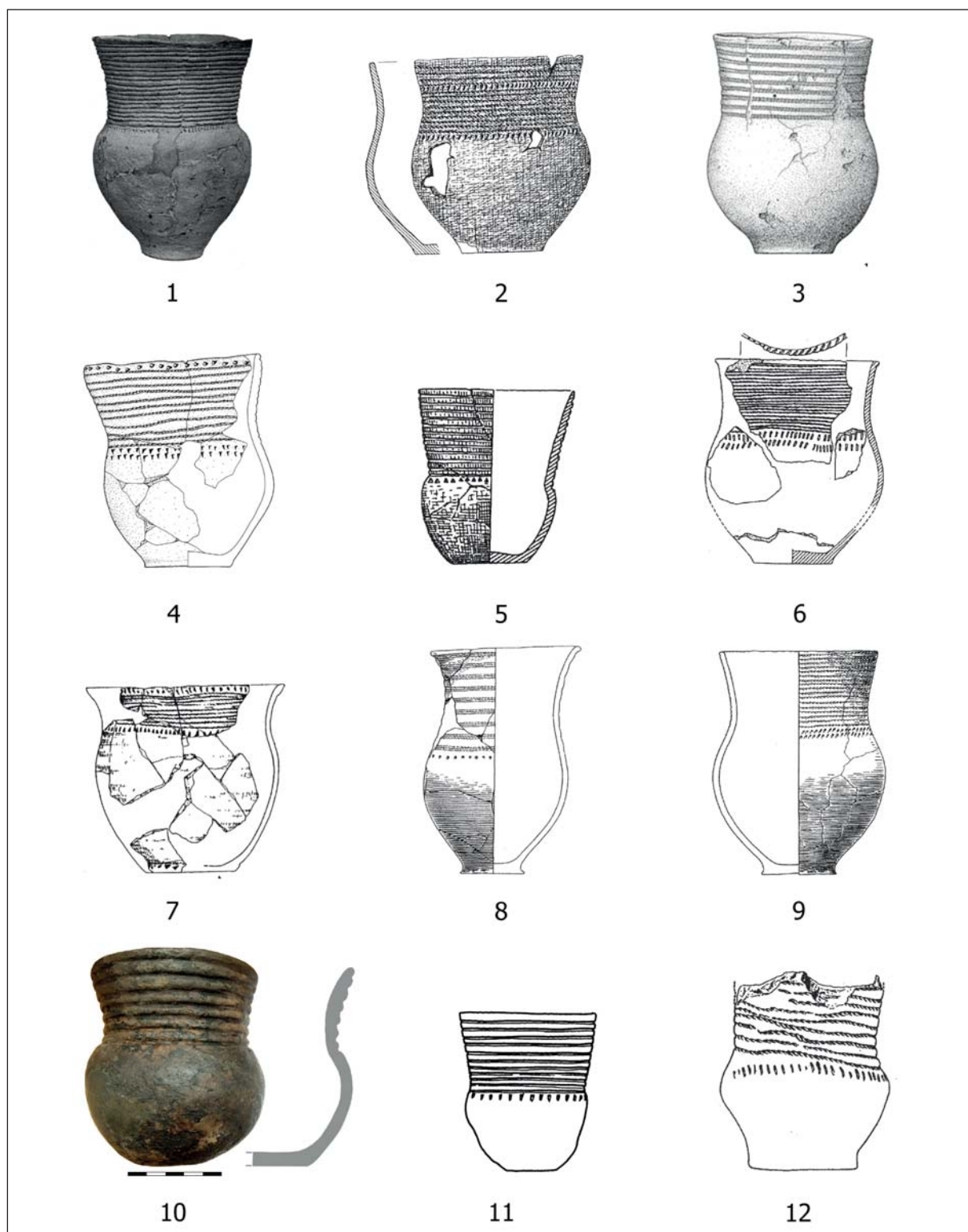


Fig. 5. Examples of Early Corded Ware beakers (c. 2900–2800 BC) from across Europe: 1. Möbjerggaarde DK; 2. Lustrup DK; 3. Flintbek DE; 4. Zabie PL; 5. Krusza Zamková 3 PL; 6. Zerniki 27 PL; 7. Średnia PL; 8. Silvolde NL; 9. Hijkerfeld NL; 10. Sventoj 1 LT; 11. Praha-Vinohrady CZ; 12. Gross-Weissandt DE (nos. 2, 3, 5, 6, 7, 8, 9, 12 after FURHOLT 2003; no. 4 after POSPIESZNY 2015; no. 10 after PILIČIAUSKAS 2018; no. 11 after BUCHVALDEK 1985; not scaled)



adjacent Romania, with examples reaching as far south as Bulgaria. Svitlana Ivanova sees them as genuine Corded Ware vessels, and their appearance in the Budzhak group as a result of contacts with Corded Ware users (IVANOVA 2019). However, they seem to appear as early as 2900 BC (FRÎNCULEASA – PREDĂ – HEYD 2015), making this direction of the link rather questionable. But arguably, more research is needed to understand their role in the geographical catchment of Corded Ware formation.

Secondly, predominant steppe ancestry and Yamnaya contacts rather refer to the more northerly forest-steppe zone, where heterogeneity is more given. The preference of the forest-steppe over the actual steppe might also be justified when looking into the distribution of Corded Ware specific jewellery elements, like bone toggles, bone/shell disks, and perforated tooth chains. Their background is ultimately in steppe societies (i.e., MANSFELD 2003; KAISER 2019, fig. 145) and their circulation might likewise point to a wider catchment.

Thirdly, a low amount of ‘Early Neolithic farmer’ and ‘Western hunter-gatherer’ ancestries in Corded Ware users, seemingly from the beginnings, can help further delimiting the searching range. Only the forest-steppe regions immediately east of the Carpathians, between Prut/Dniester and Dnieper rivers, hold settlements of these farmers around 3000 BC (NORDQVIST – HEYD 2020, fig. 9). Regions further to the east, between Dnieper and Don, and in the immediate Black Sea hinterland do not have this substratum.

Yet, it is the multicultural, complex boundary setting between Dniester and Dnieper with three different farmer societies, i.e., the local late TRB and Tripolye C2, and the just advancing users of Globular Amphoras arriving from the northwest, that is most important. In the last third of the 4<sup>th</sup> millennium BC, this zone was also inhabited by a variety of highly differentiated steppe groups summarily labelled as ‘Nizhne-Mikhailovka’, ‘post-Stog’ or ‘late post-Stog’ (RASSAMAKIN 2013; examples in *Fig. 6*). Of these the graves of the super-regional Zhivotilovka-Volchansk group (RASSAMAKIN 1999; more recently MANZURA 2016; DEMCHENKO 2016) shine out. These are defined as individual burials with side-crouched body position on both the left and right side, with arms bent and hands up in front of the face/chest. Other components of their burial customs, i.e., pit form, cover, orientation, ochre staining, and equipment, can vary. This ‘cultural horizon’ connects the more northern forest-steppe with the southern actual steppe and might well become the missing link. Particularly intriguing is the equal number of left and right-sided individuals and their connection with orientation so that left-sided skeletons have their heads in the northeast and east, and right-sided ones have them in the south and southeast (MANZURA 2016, 61). Although there is no confirmation from the bio-anthropological side, it reminds everyone dealing with 3<sup>rd</sup> millennium BC archaeology of the gender-differentiated Corded Ware burial customs.

No matter how one wants to interpret it, this all makes the Dniester-Dnieper frontier a perfect transmission zone, where innovations, ideas, and traditions could mix and form something new in the process. Particularly the arrival of Globular Amphora users might have triggered reflexes in local steppe populations. They are also on an expansionist drive both to the west and east around 3000 BC and taking over territory previously settled by late TRB and especially Tripolye C2 groups. Outposts even reach the middle Dnieper river. This may well have facilitated the emergence of Corded Ware in a belligerent response. The case of Globular Amphora Culture in the east is of great interest anyway. Their male users nearly uniformly belong to Y-chromosome I2a, a haplogroup which after 2800 BC no longer has a great future: It disappears almost completely from our aDNA records in favour of the steppe signatures R1a and R1b. Apparently, we see two contrasting expansions here between Dniester and Dnieper (*Fig. 7*). One is directed from northwest to southeast and based on Globular Amphora Culture as the last member of predominant Early Neolithic farmer ancestry. The opposite one, based on Yamnaya, Corded Ware and steppe ancestry will eventually gain the upper hand. Altogether a clash of civilizations and perfect scenario for a storm over Eastern Europe, whose outcome may well have determined the fate of Europe.

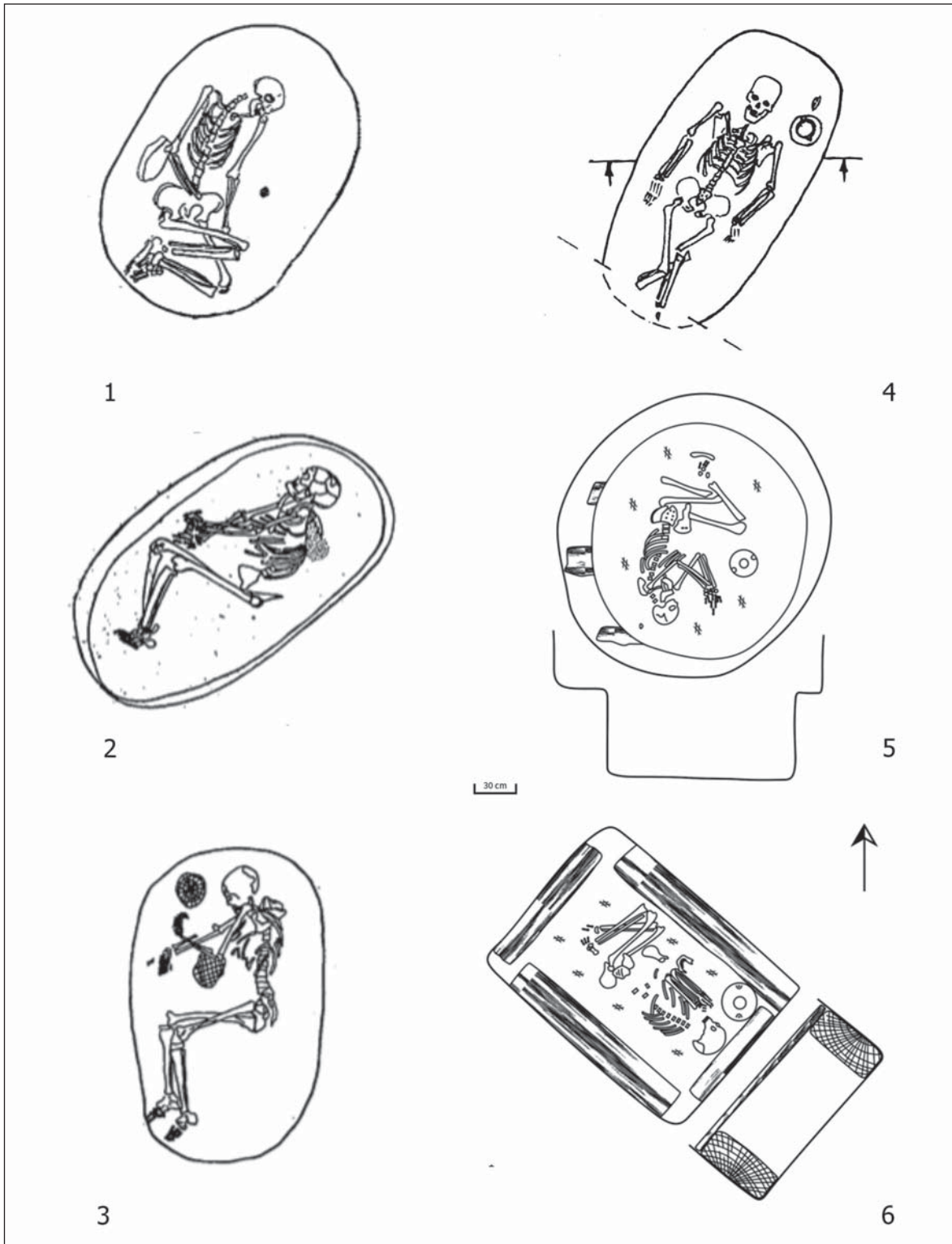


Fig. 6. Examples of 'Nizhne-Mikhailovka' (1–3), 'late post-Stog' (4) and 'Zhivotilovka' (5–6) steppe graves of the late Eneolithic from the Ukraine and Moldova: 1. Kovalevka 7, K4, G32; 2. Vinogradnoe, K24, G30; 3. Balki 'Vysokaya mogila', G7; 4. Dubovoe 'Dubova Mogyla', G10; 5. Mereni, K1, G15; 6. Taraclia 2, K18, G18 (nos. 1–3 after RASSAMAKIN 1999, Fig. 3.25; no. 4 after RASSAMAKIN 2013, Fig. 18; nos. 5–6 after MANZURA 2016, Figs 3, 2 & 4)

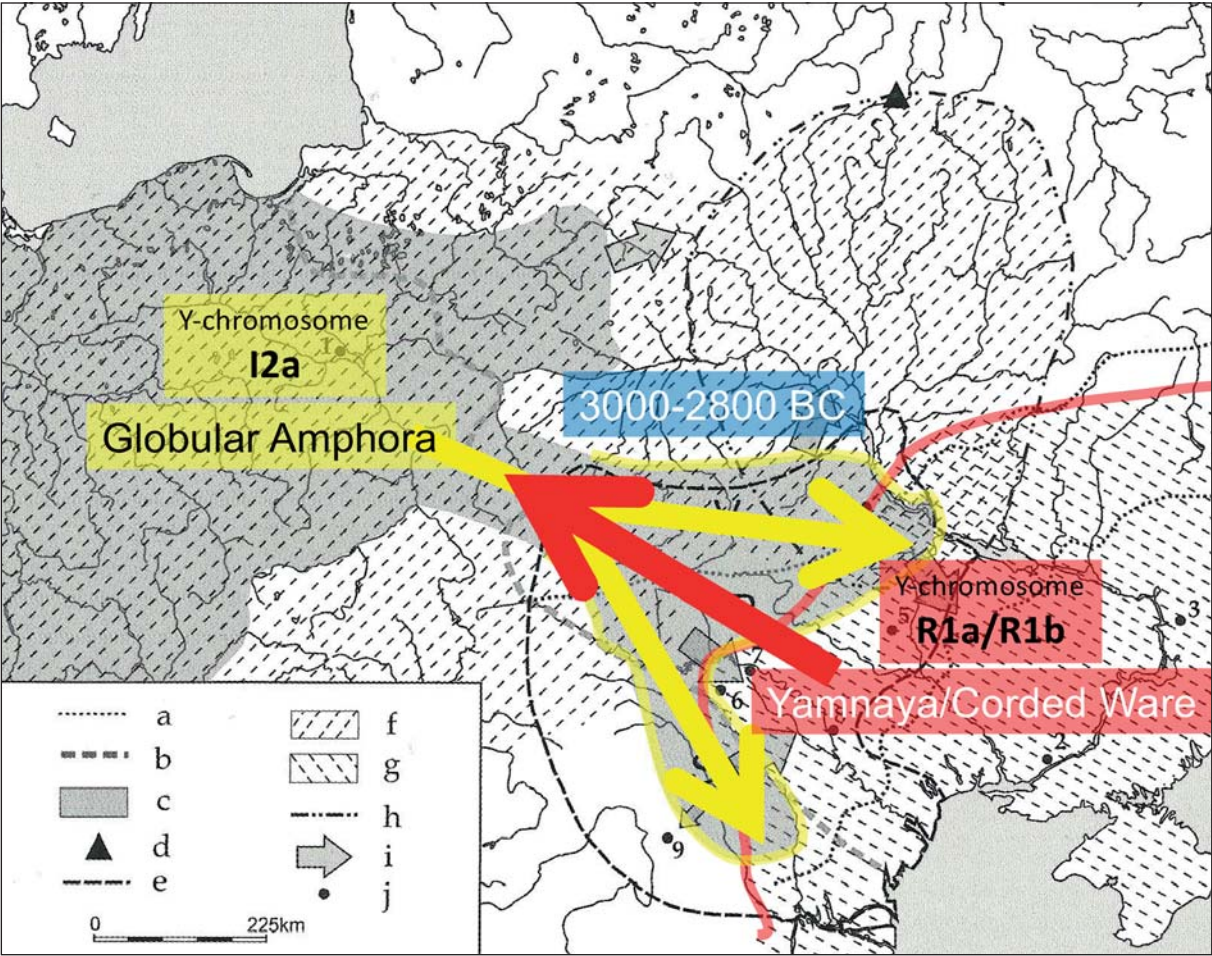


Fig. 7. Two contrasting expansions over Eastern Europe: Yamnaya/Corded Ware (R1a/R1b) versus Globular Amphora Culture (I2a) (background map after SZMYT 2013, Fig. 3)

Moving on, there are surprisingly few early Corded Ware graves (Fig. 8) in the southeastern Polish regions of Lublin and Rzeszów, in Malopolska and Silesia, as well as in Moravia (Czech Republic). This does not speak for any crossing of the Carpathian range as a source for Yamnaya – Corded Ware transmissions (ANTHONY 2021, in press; or see the arrow in ALLENTOFT *et al.* 2015). It also minimises the potential impact of the Danubian branch of Yamnaya on Corded Ware. Some early Corded Ware graves, including burial mounds, are however recorded for Great Poland (POSPIESZNY 2015; POSPIESZNY *et al.* 2015). Likewise do several graves and settlement sites prove the Eastern Baltic region to be the target of an early Corded Ware trajectory from c. 2900 BC (PESONEN – LARSSON – HOLMQVIST 2019; PILIČIAUSKAS *et al.* 2018), although some reservoir effects likely apply here. Another major region with early Corded Ware graves, more in Central Europe, is the course of the Elbe river linking Jutland (Denmark) and Bohemia (Czech Republic). Particularly Bohemia has recently seen a surge in early Corded Ware graves, securely dating to as early as 2900 BC. This makes the region a true centre and hotspot for further dispersal (DOBEŠ – LIMBURSKÝ 2013; DOBEŠ *et al.* 2021, this volume). Many of these early graves have no or only minimal equipment (i.e., flint knives) and would, without radiocarbon dating, not be recognised in their importance. They, however, fit perfectly the definition of the so-called Kalbsrieth graves (FURHOLT 2003), also known from the Mittelbe-Saale region, located down



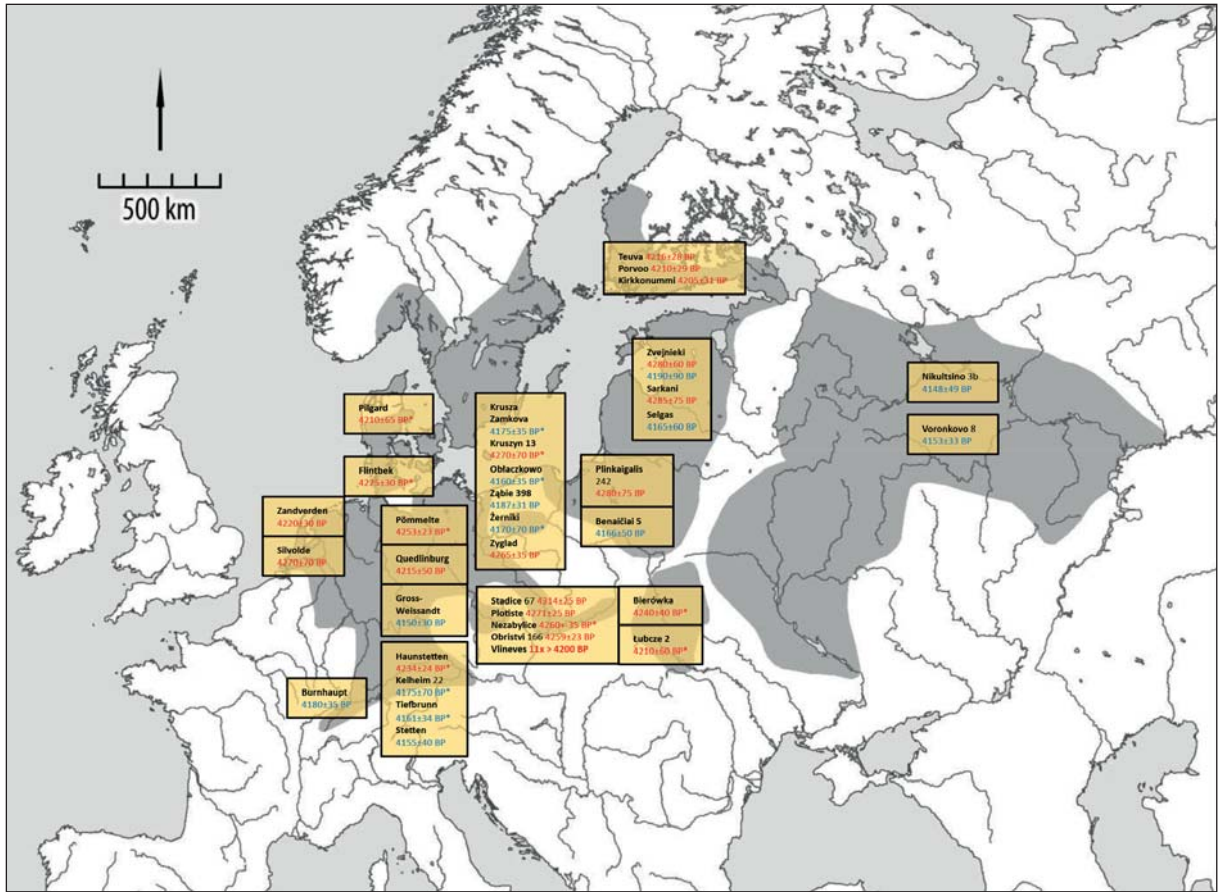


Fig. 8. The beginnings of Corded Ware in Europe: Highlighted are burials with accelerator radiocarbon dates >4200 and >4150 BP (in red dates >4200 BP, in blue >4150 BP; \* = several dates from the same grave in which case the oldest is taken; settlement sites are Burnhaupt, Kirkkonummi, Porvoo, Teuva and Zandverden; background map after NORDQVIST – HEYD 2020, Fig. 1)

the course of the Elbe river (Fig. 9). Following further north, graves belonging to the 29<sup>th</sup> century BC are also recognized in Flintbeck, Schleswig-Holstein (BROZIO 2018) and in Jutland (IVERSEN 2019). Early Corded Ware graves are also known from the Netherlands (BECKERMAN 2015) and from Bavaria. Here, the graves from the sites of Augsburg-Haunstetten; Kelheim; Moosham (all HEYD 2000); and Wartenberg are good examples. Some of them also fit the Kalbsrieth criterion. With these the Rhine river, as the western boundary of any Corded Ware expression, was already in reach of this early wave. For the Upper Rhine region, this impact is genetically recognisable in the megalithic dolmen of Aesch (Switzerland) where one individual (no. 25) dated to 2864–2501 at 2 sigma displays a high degree of steppe ancestry and the Y-chromosome R1b-L51 (FURTWÄNGLER *et al.* 2020).

Overall, what we see looming is nothing short of a true prehistoric revolution in Europe (Fig. 10): The transmission from Yamnaya, and/or a related forest-steppe society, to Corded Ware and from the Dniester/Dnieper to the Rhine takes around 150 years (c. 3050 to 2900 BC), if not less. This counts for only 5 to 6 generations (with 25–30 years per generation). Within these few generations, peoples on the move were not only adapting to a completely new environment but were also changing culture, forming what we understand as Corded Ware. No matter whether it is true or not that more males than females were moving (GOLDBERG *et al.* 2017), current figures and the mosaic-like advent of early Corded Ware



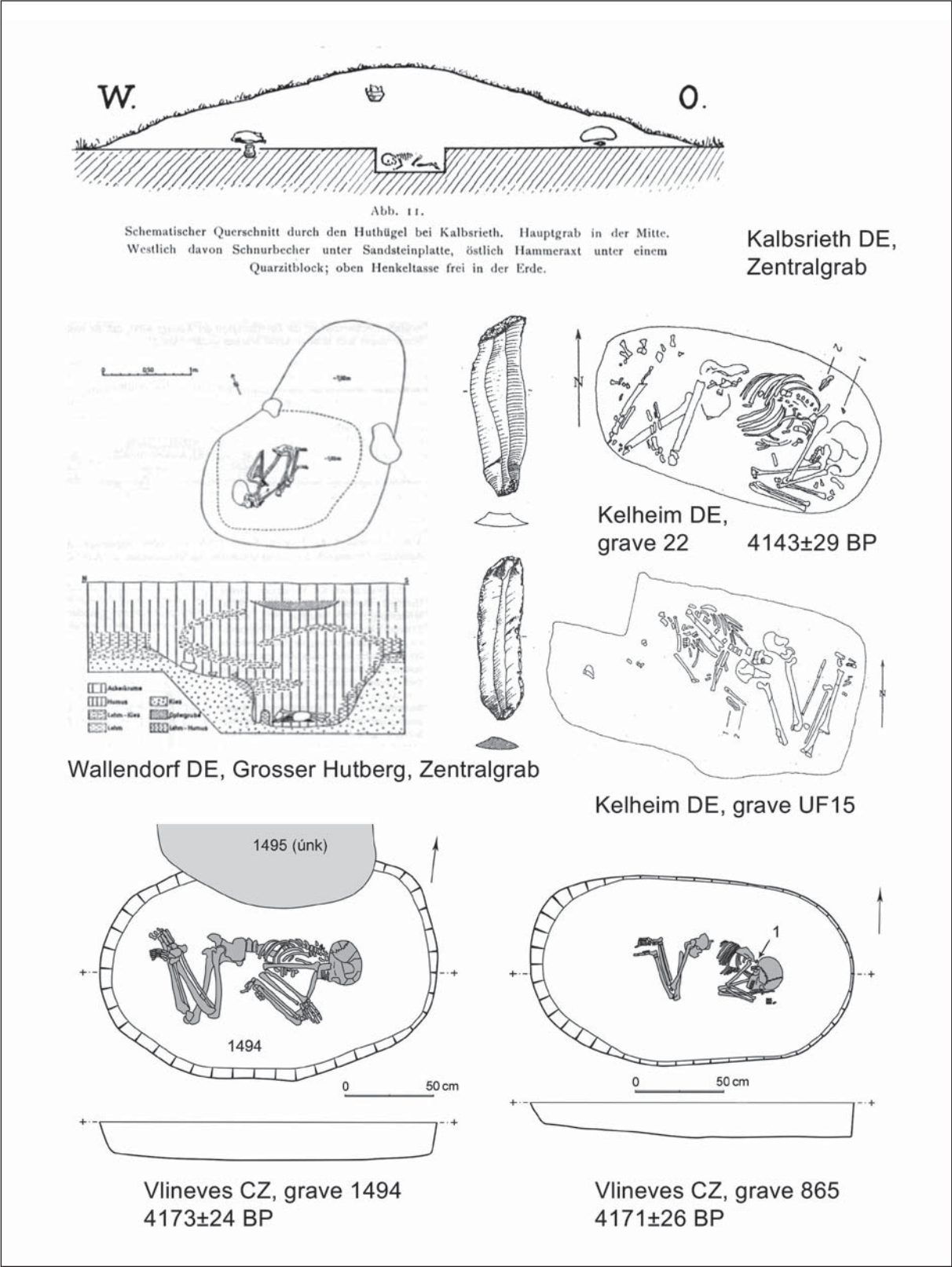


Fig. 9. Examples of 'Kalbsrieth' graves from Mittelbe-Saale, Bohemia and Bavaria (Kalbsrieth and Wallendorf after KLUTIG 1994; Kelheim after FURHOLT 2003; Vlineves after DOBEŠ – LIMBURSKÝ 2013; not scaled)

## Yamnaya, Western Black Sea – c.3050/3000 BC Corded Ware, Bohemia/Jutland – c.2900/2850 BC

### Ca. 4 to 6 generations (per 25 years/generation):

- 1) Rapid move; covering the 1500 km from the Black Sea to the Elbe (and Rhine) river in 100-150 years
- 2) Transgressing from one ecozone (steppe/forest steppe) to another (forested Central Europe), and transforming the culture thereby
- 3) Perhaps distinct gender bias (?)
- 4) No wave of advance but rather leapfrogging movement
- 5) Proper revolution when considering speed and effects

### Compare to the Early Neolithic migration:

- Aegean to Rhine c.1000 years, if not more
- no gender bias observed
  - colonisation horizon with families/clans

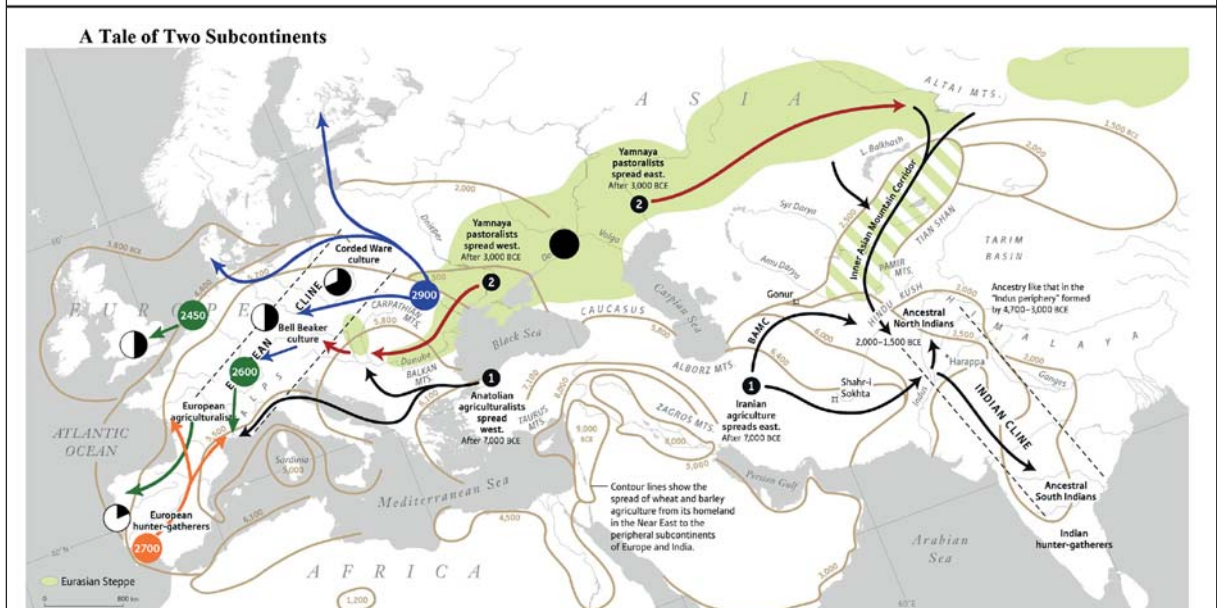


Fig. 10. Scheme of Corded Ware transmission characteristics versus the Early Neolithic colonisation of Europe (map after NARASIMHAN et al. 2019, Fig. 3B, amended; courtesy: B. Preda-Bălănică, Helsinki)

users rather speak for leapfrog than wave-of-advance migrations. Compare these facts to the Early Neolithic farming colonisation of Europe which, for the same distance of 1500 km from the Aegean to the Rhine river, takes no less than a thousand years (c. 6500 to 5500 BC). Completely different mechanisms must have been at work for these two major migration events.

### D) Middle/Later Corded Ware users on the move (from 2700/2600 BC)

From c. 2700/2600 BC, regional Corded Ware networks have established themselves as the dominating factor everywhere in their overall abiding range between Volga and Rhine rivers. At least in Central Europe, this is now the period of the Craców-Sandomierz group in Malopolska; Lokalgruppe III in Bohemia and Moravia; Mansfeld in Mittelelbe-Saale; or Geiseltal (Schnurkeramik C) in Bavaria.



Fig. 11. Large middle/late Corded Ware cemeteries of Lauda-Königshofen DE, Vikletice CZ and Zerniki Górne PL, with examples of individual graves (the cemeteries of Lauda and Zerniki are scaled to the same size for comparison; Lauda after ORTOLF 2014; Zerniki after WŁODARCZAK 1998; Vikletice after BUCHVALDEK 1985)

Everywhere we see homogenisations in burial customs and equipment rules (Fig. 11). The larger Corded Ware flat cemeteries like Zerniki Górne, Vikletice or Bergrheinfeld and Lauda-Königshofen fall in this phase too. Only a few sites, such as the fortified site of Burgerroth in Lower Franconia (Bavaria; LINK 2016; 2018), indicate the survival of descendants of Early Neolithic farmer ancestry in core Corded Ware territory. However, these appear already heavily impacted by their Corded Ware neighbours as an isotope study from the same region demonstrates (SJÖGREN – PRICE – KRISTIANSEN 2016). It is only at the western boundary of the overall Corded Ware distribution, at the Upper Rhine river, where non-R1 Y-chromosomes were recently recorded in larger frequency (FURTWÄNGLER *et al.* 2020). Similar results probably also apply, when eventually tested, to the southern boundary of the Corded Ware distribution, i.e., the Alps (indirectly MITNIK *et al.* 2019), Upper and Lower Austria, and Moravia. No doubt there must have been a good deal of internal Corded Ware mobility, also across group borders, as highlighted by the long-distance exchange of stone battle axes and other raw materials (e.g., MÜLLER *et al.* 2009) for example.

Notwithstanding, there might even be a more dramatic case of Corded Ware migrations, admittedly only recognized due to recent aDNA discoveries. The first hint is linked to the publication of the Esperstedt Corded Ware burials of the Mittelbe-Saale region in eastern Germany in HAAK *et al.* (2015). Although never fully published, these are rich in steppe ancestry but date late within Corded Ware (c. 2500–2300 BC), at a time when their percentage of steppe ancestry should already have been watered down by the incremental inclusion of people with Early Neolithic farmer ancestries (MALMSTRÖM *et al.* 2019). The Y-chromosome of the best-preserved individual of this cemetery (I1014; Grab 11) is of R1a-M417; the others seem identical. The second hint comes from a regional aDNA study of Malopolska Corded





Fig. 12. Examples of Corded Ware mass burials (= simultaneous inhumation) from Central Europe (A. Oechlitz, Sachsen-Anhalt DE; B. Gaimersheim, Oberbayern DE; C. Hanau-Mittelbuchen, Hessen DE; D. Dittigheim, Württemberg DE; E. Bergrheinfeld, Unterfranken DE; F. Szczepanowice, Silesia PL; G. Kösching, Oberbayern DE (A. after FRÖHLICH – BECKER 2017; B. after WEINER 2013; C. after <https://bellbeakerblogger.blogspot.com/2019/01/>; D. after DRESELY 2004; E. after FRIEDL – KOPECKY-HERMANN 2014; F. after <https://bellbeakerblogger.blogspot.com/2016/08/szczepanowice-mass-grave-eulau-redux.html>; G. after TILLMANN 1996)



Ware, all dated to 2500–2300 BC and thus roughly contemporary with Esperstedt (LINDERHOLM *et al.* 2020). These graves are all relatively rich in steppe ancestry, and appear genetically closer to Samara Yamnaya and Afanasievo than other Corded Ware burials, but nearly all display a significant change in their Y-chromosomes from earlier Corded Ware to the, for Corded Ware, unusual R1b-M269.

So, is there a second major Corded Ware demic diffusion event? A substantial migration happening within the now widely established, nearly pan-European Corded Ware cultural complex? The final word is not yet spoken, however particularly Piotr WŁODARCZAK (2018; 2021, this volume; KOŚKO – WŁODARCZAK 2018) advocates for a western push of peoples linked with the Ukrainian/Belarus Middle-Dnieper culture of the wider Corded Ware family. He ultimately links them with the expansion of Katacombnyaya in the steppes. While this has some credibility, others rather favour contexts, based on pottery similarities, with the late Budzhak group (i.e., IVANOVA 2019). Włodarczak's archaeological arguments are mostly referring to connections in pottery too but for the Malopolska region he also highlights changes in burial customs, such as the emergence of catacombs and richer equipment. He also emphasises the now enhanced role of the warrior in the grave, furnished with sets of flint arrow-heads deposited together, originally likely collected in quivers, and that of craftsmen. While more equipment and such sets of arrowheads/quivers also seem to be a novelty in regions further west, there is however no further indication that a kind of peopling cascade was set in motion. Yet, it would be a nice hypothesis that some of Corded Ware's mass graves (*Fig. 12*) are due to such intra-Corded Ware conflicts linked to this migration. Whatever the conclusion, a second major Corded Ware demic diffusion might also help explaining the strange craftsmen's graves distribution in the 3<sup>rd</sup> millennium BC. As a reminder, craftsmen's graves are numbering not too many in Yamnaya with none known west of the Black Sea. They are, however, very popular with Katacombnyaya. On the other hand, they are also unknown in Corded Ware, except of a few, seemingly late graves, just before or contemporary when they become prominent and widespread with early/middle Bell Beakers from c. 2500 BC (HARRISON – HEYD 2007).

### **E) The second regional transmission: The Rhine river frontier (2600–2450 BC) and the emergence of the 'steppe' Bell Beaker component**

The importance of the Rhine river as a major watershed in Europe cannot be highlighted enough. Not only forms the Rhine, and its tributaries, the natural – climatic, biogeographical, landscape/environmental – boundary between western and central Europe, the region was also a cultural boundary for millennia in prehistory. For the early 3<sup>rd</sup> millennium BC, it formed more or less the western border of the pan-European Corded Ware distribution (DENAIRE *et al.* 2014; BLOUET *et al.* 2019; TOUSSAINT 2009; WENTINK 2020, 36), and before that the same for the Globular Amphora culture (WOIDICH 2014). Regardless, and like the case of the Dniester-Dnieper rivers, versatile/volatile boundary situations are also a chance for people, cultures and practices of different backgrounds to meet, mix and to create something innovative out of it. This is exactly the case when it comes to the Bell Beaker phenomenon of the mid-3<sup>rd</sup> millennium BC. It clearly is a blend of West and East. West in terms of the origins of the Maritime beaker vessel, a proto-package, long-distance exchange, and some of the earliest radiocarbon dates which come from the very west of the Iberian Peninsular (CARDOSO 2019; GUILAINE 2019). East, as there are obviously links with Corded Wares when it comes to the All-Over-Corded (AOC; and All-Over-Ornamented AOO) beakers, individualisation, gender differentiation, and warrior display (LEMERCIER 2018; WENTINK 2020). The same West-East dichotomy was recently highlighted in aDNA (OLALDE *et al.* 2018). No wonder in such a constellation that the lower Rhine river was once, in the so-called Dutch Model (LANTING – VAN DER WAALS 1976), regarded as a possible cradle for

the emergence of the whole Bell Beaker phenomenon. But the lower Rhine appears, in this respect, problematic to me. In a nutshell and following here mostly Sandra BECKERMAN (2015) and Karsten WENTINK (2020), the Maritime beakers do not start before 2500/2450 BC and clearly postdate the AOC and AOO beakers. These are in turn ambivalent and can either be culturally Corded Ware (or Single Graves Culture as it is called here), culturally Bell Beaker, or something in-between. Individual graves with AOC/AOO beakers are nevertheless instrumental in northern and west-central France to initiate, probably throughout the 26th century BC and making use of a pre-existing flint exchange networks, first steps towards individualisation after two millennia of collective graves and megaliths. This move appears antagonistic, and in a way an additional complication, to the consensus that the initial push of ‘Beakerisation’ of the Atlantic façade arrives from the southwest, and ultimately from Iberia, along maritime routes (SALANOVA 2016).

There is, however, another region along the Rhine river which, somehow neglected, recently has provided a series of early radiocarbon dates for Bell Beaker contexts. This is the wider Upper Rhine between Alsace/eastern France, Baden-Württemberg/southwestern Germany and northern Switzerland (Fig. 13). Two of these early radiocarbon dates come from female graves in the Alsace: Achenheim, dép. Bas-Rhin (GrA-15976;  $4045 \pm 40$  BP; ULRICH 1942) and Hégenheim, dép. Haut-Rhin (MAMS-25935;  $4047 \pm 29$  BP; BILLOIN *et al.* 2010; OLALDE *et al.* 2018). A third, recently excavated and not yet dated grave from Kolbsheim, dép. Bas-Rhin is of a >40 years aged woman equipped with six amber beads and a similar but slimmer (as the Hégenheim specimen) cord-zoned Maritime beaker (SCHNEIKERT 2019, 39–40). Further Maritime beakers come from Allschwil, the neighbouring town of Hégenheim, in the Swiss canton of Basel-Landschaft (HEYD 2001). While the completeness of the cord-zoned *Sandweg* beaker, discovered in 1938, speaks for a destroyed grave, another Maritime, yet broader vessel comes from a group of three graves of the *Friedhof* site, sensibly another two women and a child. There are unfortunately no radiocarbon dates available. Besides these graves, the early Bell Beaker site of Marktbergel in Central Franconia (Bavaria), east of the Rhine, has to be mentioned in the same context. Although still awaiting full publication after the first preliminary reports (NADLER 1997), the lowest levels of this doline fill yielded earliest Bell Beaker vessels, i.e., cord-zoned Maritime and AOC beakers, frequent inner-rim decoration and red paint cover. Belonging to one of the lowest levels, #7, is the radiocarbon date of  $4084 \pm 36$  BP (Hd-19574), even slightly earlier than those mentioned before. Two further, well-preserved Maritime beakers are recorded from the Swiss lake sites of Hochdorf-Baldegg (Lucerne; BILL 1983) and Sutz-Lattrigen (Bern; NIELSEN – BACHER 1984). Here, they are regarded intrusive in late Corded Ware dwellings. However, their contexts are not well known so that they do not add much to the chronology. This is, luckily, the case for two Maritime beaker sherds from Wädenswil-Vorderau (Zürich). These were found in late Corded Ware settlement layers, dendrodated to 2571/69 BC, 2440 BC and 2427 BC (EBERSCHWEILER 1999). Since their first publication, all authors, including myself (HEYD 2000, 469), favoured the dendrodates falling into the 25th century BC. It is only now with these recent early radiocarbon dates that the dendrodate of 2571/69 BC has got credibility. It may even be preferred, as it better fits Corded Ware pottery development and chronology in eastern Switzerland.

One could now add and discuss further, seemingly early, cord-zoned and sometimes inner-rim decorated, slim Maritime beakers, albeit not  $^{14}\text{C}$  dated, from the middle Rhine region (e.g., Altlussheim; Ilvesheim; Huttenheim; GROSSMANN 2017) and from along the Moselle river (e.g., Beaufremont; Marly-sur-Seille; Perl-Borg; BLOUET *et al.* 2019) as one of the most important western tributaries of the Rhine. Or consider the northeastern French graves with AOC beakers of Blignicourt-‘Rotrate’, dép. Aube (CHAUVIN *et al.* 2018) and Ciry-Salsogne ‘La Bouche à Vesle’, dép. Aisne (HACHEM *et al.* 2011). Both, respectively, have recently either seen another early radiocarbon date (Poz-94880,  $4070 \pm 35$  BP; by the way, another female burial) or a stunning near 100% steppe ancestry (BRUNEL *et al.* 2020).

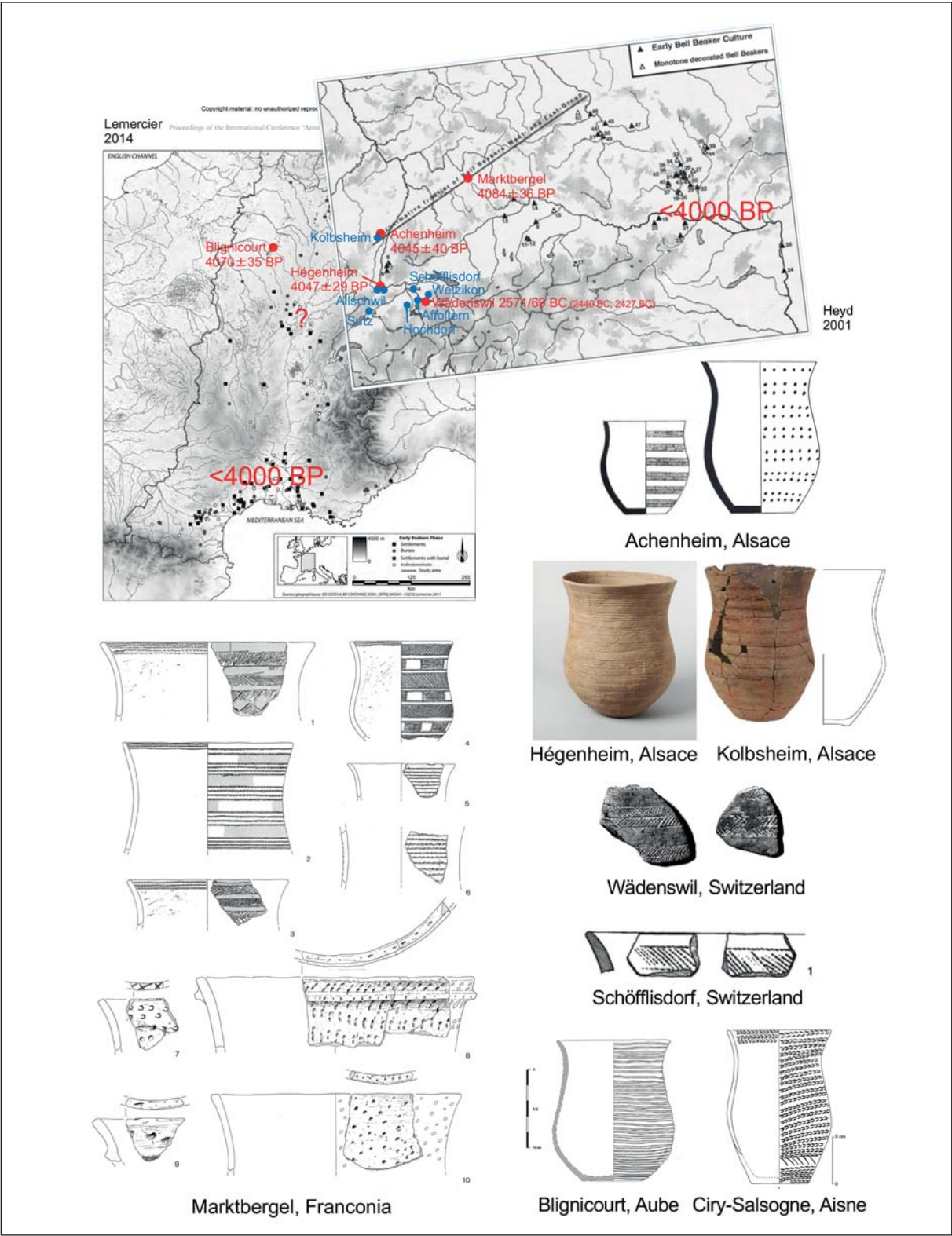


Fig. 13. 26<sup>th</sup>/25<sup>th</sup> century BC early Bell Beakers in the Upper Rhine region and beyond (background maps after LEMERCIER 2014 and HEYD 2001; beaker examples from Achenheim, Hégenheim, Kolbsheim, Wädenswil, Schöfflisdorf & Marktbergel; Blignicourt and Ciry-Salsogne added for comparison; citations for pictured beakers to be found in the text; not scaled)

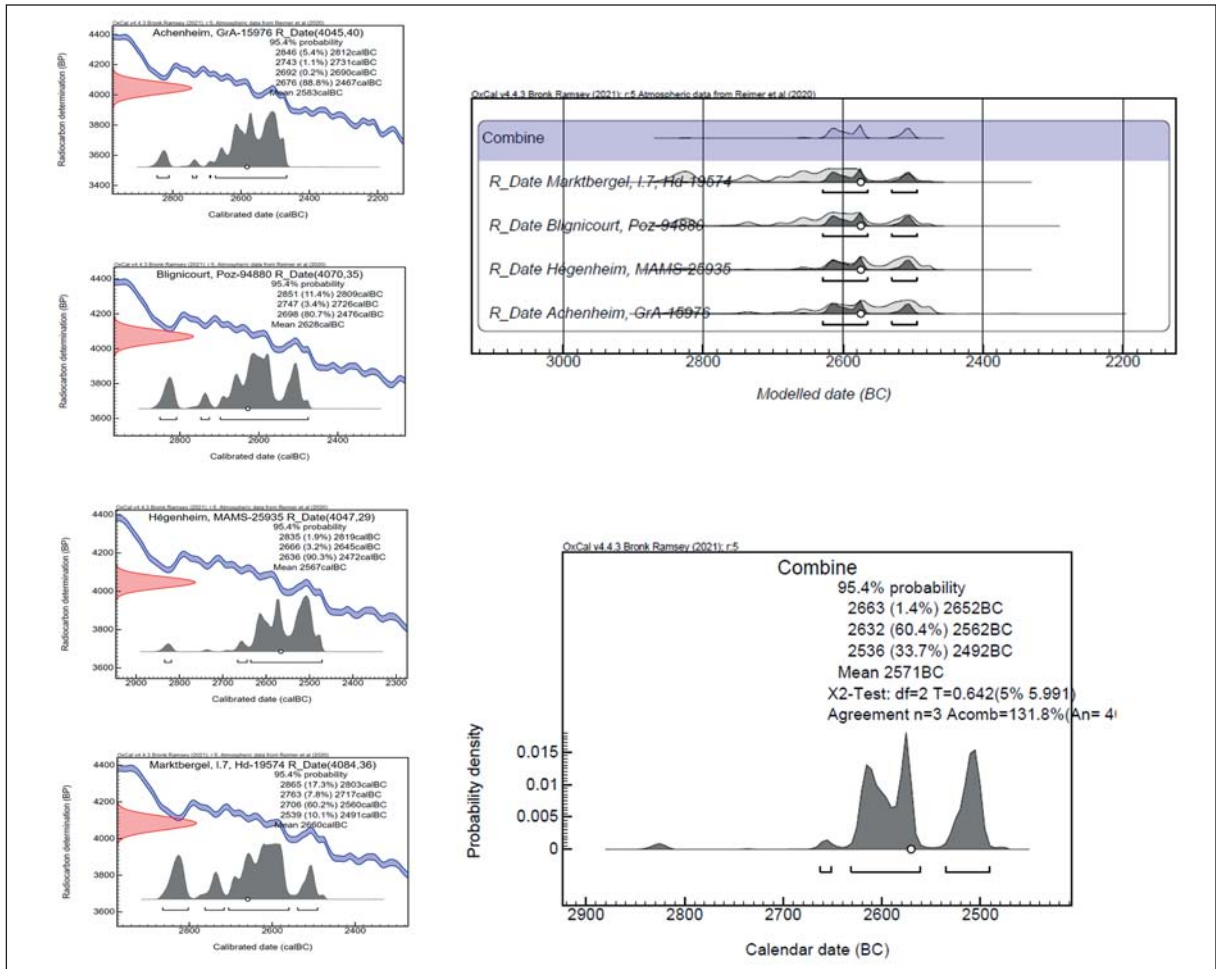


Fig. 14. The beginnings of Bell Beakers in the wider Upper Rhine region: Modelling calibration spans of earliest radiocarbon dates (courtesy Alexander Suvorov, Helsinki)

But more important, in brief, are some conclusions at this point: The Upper Rhine region yields the largest collection of Maritime beakers in Central Europe. This fact might speak for a longer duration of the Maritime tradition here, pinpointing earlier beginnings than anywhere else, already shortly after 2600 BC (Fig. 14). This would fit well the 2571/69 BC dendrodate of the Wädenswil case. In such, this region might be a replication of the situation in Bohemia, having been a hotspot for the earliest Corded Ware leapfrog dispersal 300 years earlier.

Amongst the burials having Maritime beakers are, so far, only women >40 year old, without myself being able to give a convincing answer of why only women. Nevertheless, they already display the typical orientations, gender-differentiation, and body position of the Bell Beaker East-Group's burial customs (HEYD 2007). With that in mind, there can be no doubt that the subsequent 'Beakerisation' of the East-Group starts from here (Fig. 15). It then jumps over the short geographical gap to the Danube river catchment (HEYD 2001). This trajectory is also confirmed by all Bell Beaker East-Group radiocarbon dates, counting in their hundreds, from Bavaria, Austria, Hungary, Czech Republic, Poland and eastern Germany, falling to <4000 BP. However, the spread of Maritime beakers along the Rhine could also have started from here when considering that the earliest Bell Beaker context with true Maritime beakers from the Netherlands (Lanting's 2Ia beakers) also only dates to <4000 BP (BECKERMAN 2012).





Fig. 15. Scheme of 26<sup>th</sup>/25<sup>th</sup> century BC early Bell Beaker transformations and their interrelations along the Rhine river (background map: <https://www.eea.europa.eu/data-and-maps/figures/drainage-basins-of-regional-seas-1>)

The Middle Rhine region might also reflect this well, taking an intermediate position with AOC/AOO beakers arriving from the Lower and Maritime beakers from the Upper Rhine. Interestingly, there is another part of Europe which has, so far, not delivered that many Bell Beaker radiocarbon dates >4000 BP. This is east-central and southern France (LEMERCIER 2014; LEMERCIER *et al.* 2014). The few ones published certainly do not match our early dates from the Upper Rhine. A scenario in which the Upper Rhine region also radiates to the west and southwest is therefore not entirely unexpected. But it contradicts another orthodoxy in which southern French Bell Beakers ultimately also arrive from Iberia via Mediterranean routes (LEMERCIER 2012). In fact, recent time-depth genetic calculations on the beginnings of steppe ancestry in southern France now confirm the very early arrival of ‘steppe’ Bell Beaker users (SEGUIN-ORLANDO *et al.* 2021, however perhaps not as early as claimed in this paper). One could nevertheless imagine the Iberian ‘pioneers’ (one might also want to call them ‘missionaries’), bringing over the novel Beaker idea, are rather archaeologically and genetically invisible. They may not have been large in numbers.

In this scenario, some of these pioneers may have arrived at the Upper Rhine region from the Mediterranean via the Rhône-Saône river system, making use of the versatile/volatile boundary situation and finding thus acceptance and conversion in locals. In doing so, these create a first Central European ‘Maritime’ hotspot for further Bell Beaker radiation. The same may have happened at the Lower Rhine region via the Atlantic and North Sea networks but materialised differently, i.e. more syncretistic via the AOC/AOO beakers. I would not be surprised if there will soon be visible Y-chromosome differences between the Lower and Upper Rhine. Within a few generations, at some point around 2500 BC, this radiation turned into a proper demic event. It would send Bell Beaker users, as descendants of local Single Grave Culture/Corded Ware users rich in steppe ancestry, on the move to regions further to the west, triggering the ‘Beakerisation’ of Britain and Ireland, and the *Rückstrom* to France and finally Iberia. However I reckon it is not the initial Upper Rhine river region but the secondary melting-pot and population reservoir of the Middle Danube where the East-Group and subsequently the western European Y-chromosome of R1b-P312 originate. Overall, it would be an interesting hypothesis to see this final expansion to western Europe in the continuity of changes having started much further east, as described above in the contexts of Katacombnya, the Middle-Dnieper culture, and developed Corded Ware.

## F) Conclusions: Europe on the move

From 3100/3050 BC to c. 2450 BC, from Yamnaya expanding to the northwestern shores of the Black Sea until when Britain and Iberia receive first ‘steppe’ Bell Beaker migrants, a good deal of Europe is moving and shaking. Three distinct migration events, directed from east to west, were discerned in this paper, the first linked to Yamnaya burial custom users, the second to Corded Ware users and the third to Bell Beaker users. A fourth, awaiting confirmation, might have happened within established Corded Ware. These are 600 years in which, following our archaeological records, every 150 to 200 years a major migration event, culturally transforming parts of Europe as its consequence, occurred. Only those leading to the west were counted here. Afanasievo and Globular Amphora users, as briefly mentioned above, went in the opposite direction and so appears the Fatyanovo culture of the wider Corded Ware family (NORDQVIST – HEYD 2020). A few centuries later, the Russian Babyno culture of the Dnieper-Don region, dated to c. 2100–1800 BC, is likewise seen to have formed out of a strange Central European Early Bronze Age input. Unterwölbling/Únětice/Nitra-like burial features and jewellery finds are interpreted (LYTVYNENKO 2013; MIMOKHOD 2018; GRIGORIEV 2019) in resulting from a scenario of



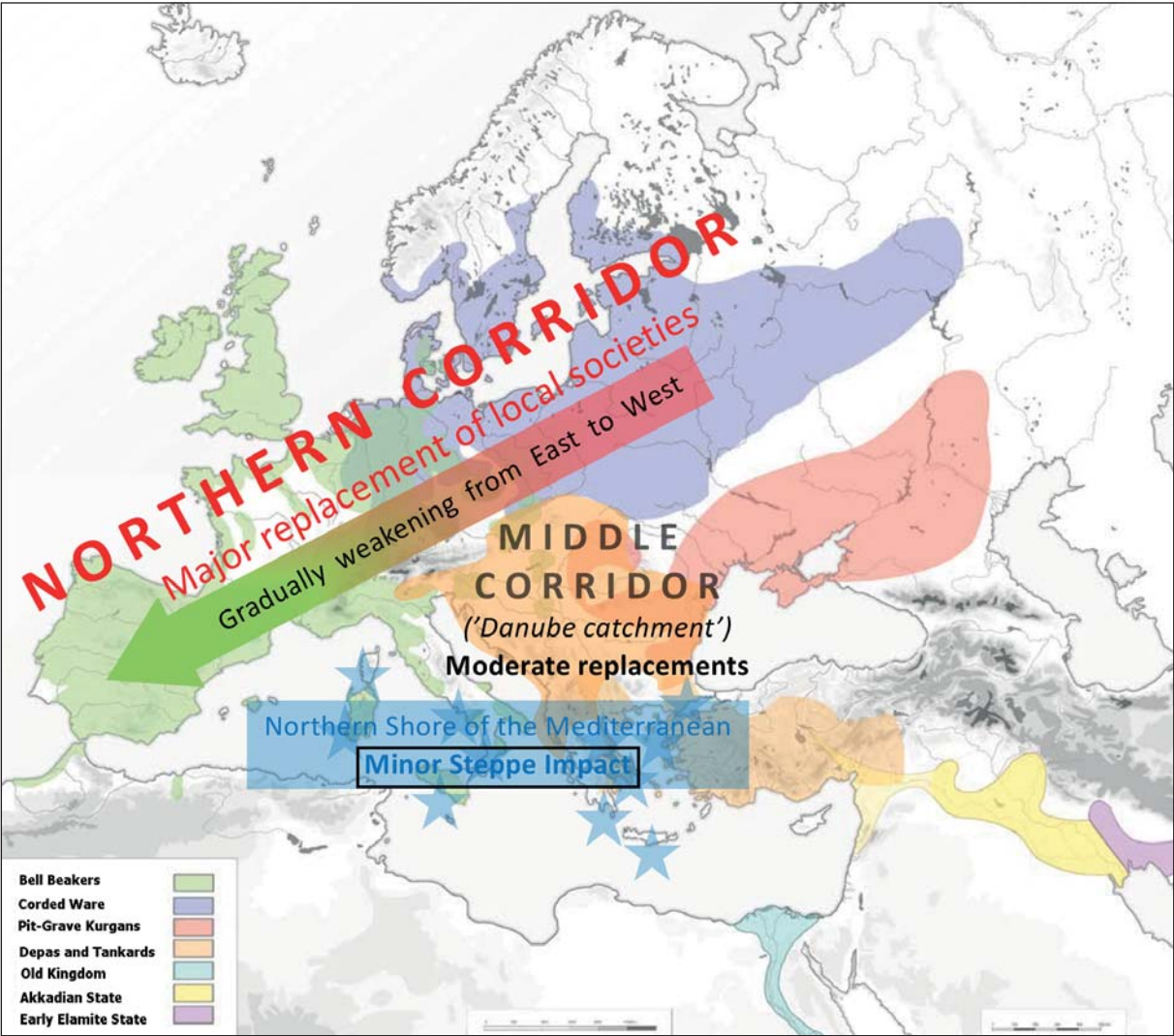


Fig. 16. Scheme of partial replacement corridors overlying the East to West regions of 3rd millennium BC transformations (background map after Risch et al. 2015, Fig. 2)

long-distance migration. Taking into consideration our well-known chronological resolution problems in the 3<sup>rd</sup> millennium BC due to frequent radiocarbon plateaus leading to wide calibration spans, the picture can only mean we have a more or less constant mobility process. Just the oscillating peaks, i.e., visible changes of material culture and burial customs in a given region, are being recognised in our records. This might well justify the term “large-scale” and let appear – in relative terms due to different demographics involved – *The Migration Period*, conventionally dated to AD 375–568, like a dwarf against 600 years of migrations in the 3<sup>rd</sup> millennium BC. Taking also into account the seemingly endemic distribution of the Plague (*Yersinia pestis*: e.g., RASCOVAN *et al.* 2019), and potentially other dreadful diseases surely soon to be added when more unlucky victims are being aDNA tested, it is a short step to likewise assume that violence, conflict and warfare may also have played another inglorious role. No wonder, weapons, warriors and heroes find their ostentatious display in burials, and next and on top of graves and mounds. Add subsistence shortcomings –famine – and it seems the *Four Riders of the Apocalypse* were never far away in the 3<sup>rd</sup> millennium BC.

But the near-complete replacement scenarios of the 2015/2018 aDNA papers need to be adjusted (Fig. 16). At least, they only roughly fit to a northern ‘corridor’, that is all regions north of the Carpathians and the Alps, including the Baltics and southern Scandinavia. A middle ‘corridor’, i.e. all regions of west of the Black Sea and south of the Carpathians, linked by the course of the Danube river, only seem to be half-way affected. Local populations here are still well recognisable in both whole genomes and Y-chromosomes, and culturally after the mid of the millennium. The south, regions following the northern shores of the Mediterranean, are finally only punctually touched by events. However, the impact is east-west-staggered anyway, so that Iberia only faces 40% replacements despite being in the northern ‘corridor’. That is why geography is so important in understanding scale, size and extent of events. In the same way tell us the two/three distinct transformation zones in Europe, highlighted above (i.e., 1. the forest-steppe between Dnieper/Dniester; 2. the Upper Rhine in the border triangle of France, Germany and Switzerland; and in-between probably 3. the Elbe river catchment with Bohemia and Mittelbe-Saale, see Fig. 1) about origins, directions and trajectories.

And why moving? I like the idea of the wanderer, traveller and the migrant (WENTINK 2020, 239 ff.). It fits well the notion of ‘feet on the ground’ which probably is ultimately responsible for the typical Yamnaya burial custom of supine body position with flexed upright legs so that the feet of the deceased still stand and firmly connect to the earth. This goes to the core of Yamnaya burial ideology and beyond, as demonstrated by the frequent footprint/sandal images on their anthropomorphic stelae. But, there must be more; more also than just the right epoch witnessing enhanced mobility facilitated by wagons for transport, domesticated horses, pastoral economy, and cattle/sheep for milk (FRACHETTI 2012; WENTINK 2020, 34). Therefore, very human aspects, repeated many times in history, should be added, like: seeking social promotion and personal satisfaction; receiving recognition and fame; gaining and controlling material resources and sexual partners; and following charismatic leaders, often combined with a strong religious connotation, who offer a share of all that...

### Acknowledgement

I would like to thank Richard J. Harrison, Chichester / UK, Bianca Preda-Bălănică and Alexander Suvorov, both Helsinki, Henry Webber, Cirencester / UK, and Maxime Brami, Mainz / Germany for various support when writing this article and putting the figures together.

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# Yamnaya and Globular Amphora culture relationships – facts and gaps

MARZENA SZMYT

## Abstract

*The paper presents the current view on relationships between two communities linked with two different archaeological entities: the Yamnaya (YC) and the Globular Amphora cultures (GAC). It offers a perspective of archaeological and bio-archaeological facts, which are a kind of materialised confirmation of direct and mutual, as well as not one-off but rather recurrent connections between both communities. The material evidence of contacts comes from the northern part of the forest-steppe zone, from the Prut as far as the middle section of Dnieper basin. These were peripheries of areas entered by people associated with the GAC and YC and, at the same time, frontier areas for both units. It is here that spatial contacts are confirmed by archaeological data. The evidence includes three series of features: GAC graves, YC graves and graves with syncretic traits that respect the basic funeral rules of the YC with minor exceptions for the GAC. So far, most information concerns the western edge of the forest-steppe (Prut and Dniester basins), while far less is known about its eastern edge (on the middle Dnieper). By far, the least known is its central portion, lying on the Southern Bug and in its drainage towards the Siniucha River. In the northwest of the forest-steppe, where most of the archaeological sites attesting to the contacts in question are located, it is possible to indicate a clear borderland between lands controlled on the one hand by the communities of the GAC and on the other hand by the communities of the YC. Generally, in frontier areas both communities must have come into direct and close (even face to face) contact with one another. It is very likely that these contacts could have been in the form of migration of individual people (perhaps marital exchange?). The main gaps in the current state of our knowledge result from the failure to perform scientific (mainly isotopic and genetic) examinations of materials from syncretic graves, displaying traits of both entities. New research projects are necessary, with the need becoming even more pressing not only for archaeology but also archaeological sciences, including archaeogenetics.*

**Key words:** 3<sup>rd</sup> millennium BC, East European forest-steppe, cultural frontier, cross-cultural contacts

The aim of this contribution is to present the current knowledge about relationships between two communities linked with two different archaeological entities: the Yamnaya (YC) and the Globular Amphora cultures (GAC). The focus is mainly on the perspective of archaeological facts that can be interesting as a materialised confirmation of direct and mutual, as well as not one-off but rather recurrent connections. At the same time, an attempt shall be made to point out the main gaps in both archaeological and bio-archaeological evidence of the connections and the offered interpretations.

To begin with, it has to be stated that in the cases of both YC and GAC, we are dealing not only with the relics of material culture. In both cases, not only archaeological, but also geo- and bio-archaeological data lead to the conclusion that the material remains are connected to two specific but different structures of economic activities, social organisation and ceremonial practices (see e.g. for the YC – MERPERT 1974; HARRISON – HEYD 2007; KAISER 2019; for the GAC – SZMYT 2017; see there for further reading). Still, more data point to the genetic differentiation of populations associated with the YC and GAC (e.g.

ALLENTOFT *et al.* 2015; HAAK *et al.* 2015; MATHIESON *et al.* 2015; NIKITIN *et al.* 2017a; 2017b; TASSI *et al.* 2017; MATHIESON *et al.* 2018; FERNANDES *et al.* 2018; WANG *et al.* 2019).

### **Background: How were direct contacts between the GAC and YC possible?**

As a rule, two conditions must be met for direct intercultural contacts to be possible: simultaneous occurrence and spatial proximity.<sup>1</sup> Both requirements are fulfilled in relation to the entities in question. After years of research, there is no doubt that the GAC and YC were partly synchronous and proximate. This was a consequence of two population shifts: the migration of a part of a GAC population from its core area in the Vistula basin to the south-east and ultimately to the forest-steppe zone, and the movements of YC groups from the steppe into the forest-steppe zone. It was these shifts that made the forest-steppe zone, specifically its western section between the Prut and Dnieper rivers, a potential contact place of the two communities.

### **Movements of people linked to the GAC**

Taxonomic, chorological and chronological data suggest a Central European origin of GAC populations. Of crucial importance is the fact that throughout GAC existence, its core area lay in the Vistula-Odra basin. Here, especially in its middle (Lowland) portion, the archaeological evidence includes both the most ancient as well as the most long-lasting data.

Initially, in their movements to the east and especially the south-east, GAC communities followed earlier shifts dated to the 5<sup>th</sup> and 4<sup>th</sup> millennia BC, undertaken first by Danubian agriculturalists (Linear Pottery culture and post-Linear groups as e.g. the Malice or Lublin-Volhynia culture) and later by Funnel Beaker culture communities (SZMYT 2018). This is true especially in Volhynia and Podolia. However, the directions of new shifts performed by GAC population are quite clear: they covered considerably wider areas by including territories lying in the south (the Moldavian Upland) and east (towards the middle section of the Dnieper).

The relics of the presence of GAC communities east and south-east of the Vistula drainage basin form a basis for the concept of the eastern group of the GAC, distinct from two other, and older, territorial units: central and western (WIŚLAŃSKI 1970). The eastern group is located south of the Pripet River, between the Western Bug and Dnieper rivers (*Fig. 1*). Its southern border runs from the middle section of the Dnieper, through the middle part of the Southern Bug, to the middle Dniester and upper Western Bug, with the southernmost branch extending to the area between the Siret and Prut rivers. The eastern frontier of the eastern group can be marked along a line drawn from the Teterev river to the drainage of the upper Southern Bug. In sum, the GAC eastern group covers the territory of Volhynia, Podolia, the Moldavian Upland and – in part – the middle Dnieper basin.

In this huge area, three main concentrations of sites are located, conceptualised as three separate subgroups of the eastern GAC: Volhynian, Podolian and Moldavian/Siret (SZMYT 1999). A hypothesis can be put forward, that the areas of the subgroups (i.e. with concentrations of sites) that reach from the Western Bug to the Southern Bug and Prut-Siret interfluvium were settled and controlled by GAC communities. They created there long-lasting settlement structures marked by stone cist tombs. Some of them contained multiple human burials. In other cases, stone cist graves with one or two burials were built close to each other and formed clusters of tombs.

<sup>1</sup> This does not have to mean proximity in a geographical sense. I refer in this case to different perception of physical space, dependent on cultural and social factors.

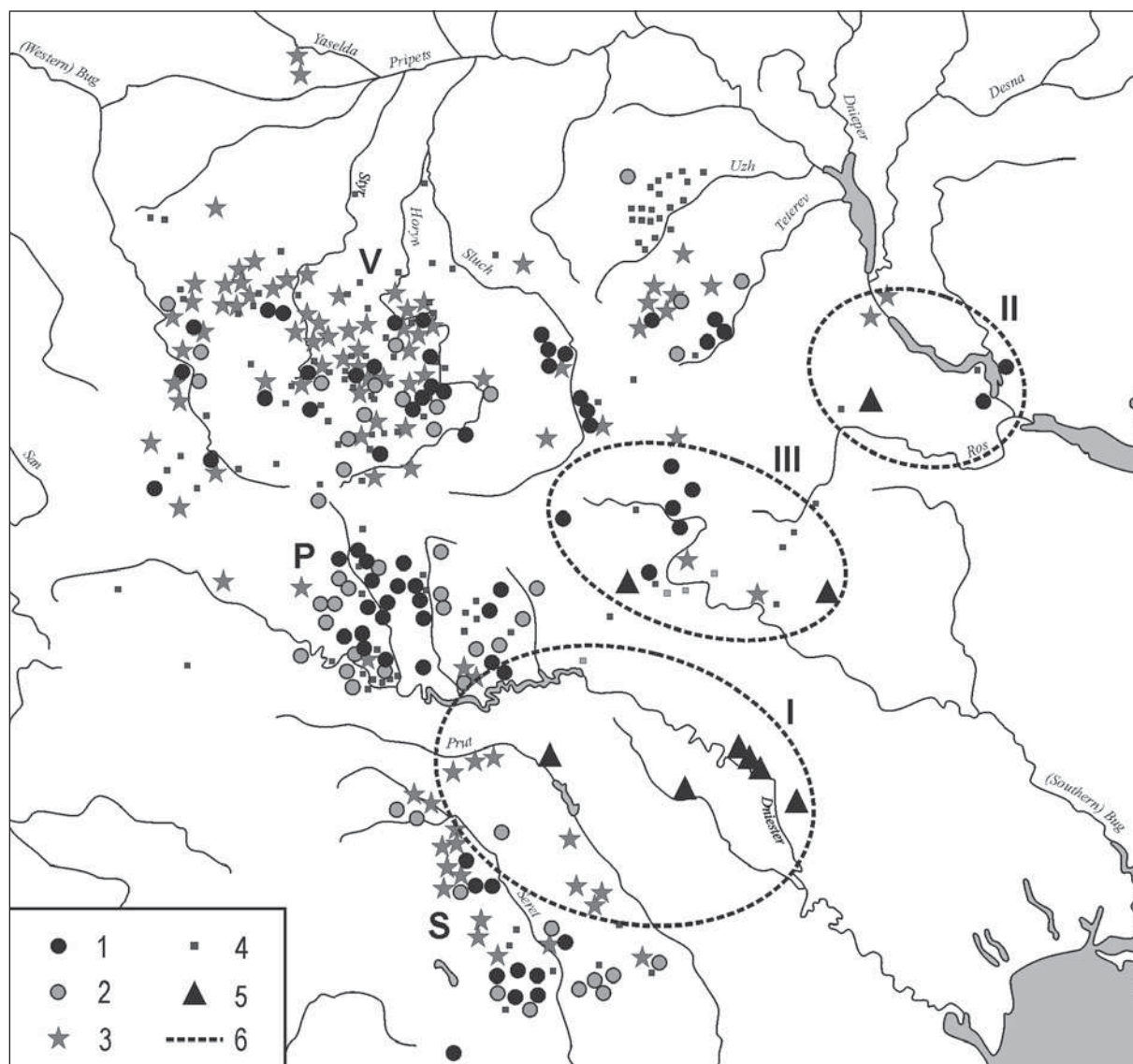


Fig. 1. The eastern group of the Globular Amphora culture, distribution of sites: 1. Grave of the Globular Amphora culture; 2. Possible grave of the Globular Amphora culture; 3. Other sites with pottery of the Globular Amphora culture; 4. Flint artefacts (mainly axes or chisels) possibly linked to the Globular Amphora culture; 5. Kurgan graves of the Yamnaya culture with artefacts of the Globular Amphora culture; 6. Frontier areas in the forest-steppe (I, II and III); V – Volhynian subgroup; P – Podolian subgroup; S – Siret (Moldavian) subgroup. After SZMYT 2013, changed

Unfortunately, it is hard to fully reconstruct complex settlement structures in the eastern group. This is believed to be one of the serious gaps in current research. It is the result of the absolute dominance of fortuitous discoveries and absence of systematic field investigations. Consequently, the entire eastern group witnesses now a huge overrepresentation of funerary sites over settlement ones. As a matter of fact, only few fragments of settlements and camps have been explored, with the number of such sites growing very slowly (cf. SHELOMENTSEV-TERSKIY 1996; SZMYT 1999, 31–33; ŁYSENKO – SZMYT 2011, 241–243). Furthermore, a vast majority of graves linked to the GAC consist of features in the form of stone cists that were discovered accidentally during land cultivation and were hard not to notice. There



are still only few features without stones, similar to those which are known from both central and western groups. Another element that distinguishes the eastern group from the other two is the low incidence of features with animal deposits. Meanwhile, in the central and western groups, livestock carcass deposits, found directly in human graves or close to them, or within settlements, are one of the most conspicuous traits of GAC population rituals (e.g. SZMYT 2006; 2017, 249–250; WOIDICH 2014, 136–141).

Despite these limitations, it is possible to distinguish areas in the east settled and controlled by GAC communities from others where only scattered traces are evidenced. The latter, in the form of single, isolated sites are found between the Southern Bug and the middle course of the Dnieper and reach even the left bank of this river: Kiev-Nikolskaya Slobodka III and Bile Ozero 1 (SVESHNIKOV 1983, 36; ROZDOBUDKO – YURCHENKO 2005; SZMYT 2013). The presence of these scattered sites could indicate a form of control – hard to define in more specific terms – by the GAC over wider areas around territories permanently settled by its communities.

West of the area occupied by the Siret (Moldavian) subgroup, in Transylvania, an isolated GAC tomb has been recorded thus far in Sânmartin-Ciuc (SZÉKELY 2002). This could be a sign of a cross-Carpathian movement by a small population group in the direction of the Carpathian Basin.

The chronology of the eastern group is known in terms of general facts, although many details are still subject to controversy. Towards the end of the 4<sup>th</sup> millennium BC (in its final century?), GAC settlers must have arrived in Volhynia, moving from the Lublin Upland. Their movement south, i.e. towards Podolia and the Moldavian Upland, was rather quick, as shown by the dates attributed to grave assemblages in Romania. Indirect data seem to show that the movement from the west to the east, i.e. from Volhynia towards the Dnieper continued longer than the one from the north to the south.

### Movements of people linked to the YC

The cradle of the YC was the steppe zone where the trait structure constituting the entity (*sensu* MERPERT 1974) formed, including burying the dead under round barrows or in their mounds, in rectangular and oval pits, on organic mats, with the dead lying supine or crouched on their side. Sprinkling ochre over the dead or placing ochre lumps next to bodies were other characteristic traits, as was the absence of any grave goods or very few ones such as single weapons, tools, vessels or ornaments. In the European prehistoric framework, this trait structure in a broad sense has recently been conceptualised as the “Yamnaya package” (HARRISON – HEYD 2007, 193–203). At the same time, many researchers point to the fact that the cultural unification attributed to the YC hides its advanced diversification. It is seen chiefly in relation to space. In this approach, a number of regional/local varieties or groups are distinguished within the “Yamnaya cultural-historical community” (e.g. MERPERT 1974, Fig. 1; SHAPOSHNIKOVA 1985, 347–348). A further consequence of stressing the differences is the distinction of separate cultures within the Yamnaya community. Instead of searching for the beginnings of the YC on a specific fragment of steppes, the multitude of genetic centres, connected to the regional Late Eneolithic communities is increasingly often pointed out nowadays (IVANOVA 2013).

Many controversies are raised by the absolute chronology of the YC. It is defined, admittedly, by a very large set of radiocarbon measurements, but unfortunately of rather varied credibility. A critical analysis, taking into account various factors making radiocarbon determinations older or younger (RASSAMAKIN – NIKOLOVA 2008, 60–67; recently: KAISER 2019, 53–61), leads to the conclusion that many published determinations are useless for any methodologically correct study.

In general terms, it is assumed that the YC rose on the steppes in the final centuries of the 4<sup>th</sup> millennium BC. On the north-western Black Sea Coast, of the greatest interest to us here, the beginnings

of the Budzhak culture, distinguished within the Yamnaya entity, are dated to 3200–3100 BC (IVANOVA 2013).

Still, relatively little is known of the time when YC population groups intruded into the forest-steppe zone (BIDZILYA *et al.* 2005, Table 1). Most radiocarbon determinations have until recently come from sites located in the forest-steppe on the middle Dnieper and suggested that the YC appeared there after 2800 BC (e.g. RASSAMAKIN – NIKOLOVA 2008, Table 1). Now, owing to new and systematic investigations, a set of accurate chronometric and stratigraphic data from the forest-steppe on the middle Dniester, specifically from the Yampil Barrow Complex, is available (GOSLAR *et al.* 2015). They place the oldest traces of the YC on the middle Dniester ca. 3000 BC. Alas, for the time being, there are no credible radiocarbon determinations, well-set in a stratigraphic context, for the forest-steppe zone on the Prut River, with only few for the area on the Southern Bug River (see BIDZILYA *et al.* 2005, Table 1).

### The forest-steppe zone as a borderland

The areas located in the western Ukrainian forest-steppe (located between the Prut and Dnieper rivers) played a crucial role for the relationships of GAC people with Yamnaya populations. It is here that spatial contacts are confirmed by archaeological data. The evidence includes three series of features: GAC graves, YC graves and graves with syncretic traits that respect the basic funeral rules of the YC with minor exceptions for the GAC. So far, the most information concerns the western edge of the forest-steppe, while far less is known about its eastern edge (on the middle Dnieper). By far, the least known is its central portion, lying on the Southern Bug and in its drainage towards the Siniucha River.

### The western edge

Between the Prut and Siret rivers, one of the clusters of the GAC eastern group was located, called the Moldavian subgroup (cf. BURTĂNESCU 2002, see here for older literature). Its core region extended over the western portion of the Siret drainage basin (*Fig. 1.I*). There, several graves were found, most of which had the form of stone cists holding one or several burials and goods typical of the GAC (clay vessels, flint axes, chisels and knives, bone and antler artefacts). In addition, a grave without stones (grave 3 in Dolheştii Mari, Romania) and a single feature holding a cattle deposit (grave 4 in Dolheştii Mari) were discovered. Radiocarbon dates indicate that GAC populations settled this area at least from ca. 3000–2700 BC (MIHĂILESCU-BÎRLIBA – SZMYT 2003).

The area east of the Prut River (i.e. located between the Dniester and Prut rivers) was occupied by YC communities, lately designated as the Budzhak culture (IVANOVA 2013; cf. also IVANOVA – TOSCHEV 2015b, 357–381). They left behind graves either covered by barrows or dug into existing earlier mounds. As a rule, the graves held the remains of a single deceased. Most of the graves did not have any grave goods surviving, while the others usually contained a single vessel, with other artefacts being rare. In the area in question, Yamnaya barrows are located on valley edges, chiefly of the Dniester, Prut and Reut rivers, while their absolute chronology is not clear (IVANOVA – TOSCHEV 2015a, 23–24). Precise absolute chronology data are available only for the middle Dniester area, specifically, the Yampil Barrow Complex mentioned earlier, where the existence of YC communities can be dated more accurately within the time span of 3050–2500 BC (GOSLAR *et al.* 2015, 282).

Some of the graves respect all the basic funeral rules of the YC with one exception: grave goods with GAC traits (*Figs 2–3*). These are mostly intact vessels as for instance in the Camenca, district *loco*, kurgan 445/7, Corpaci, Edineţ district, kurgan 2/7, Ocnîţa, Camenca district, kurgan 3/14, Mărculeşti,

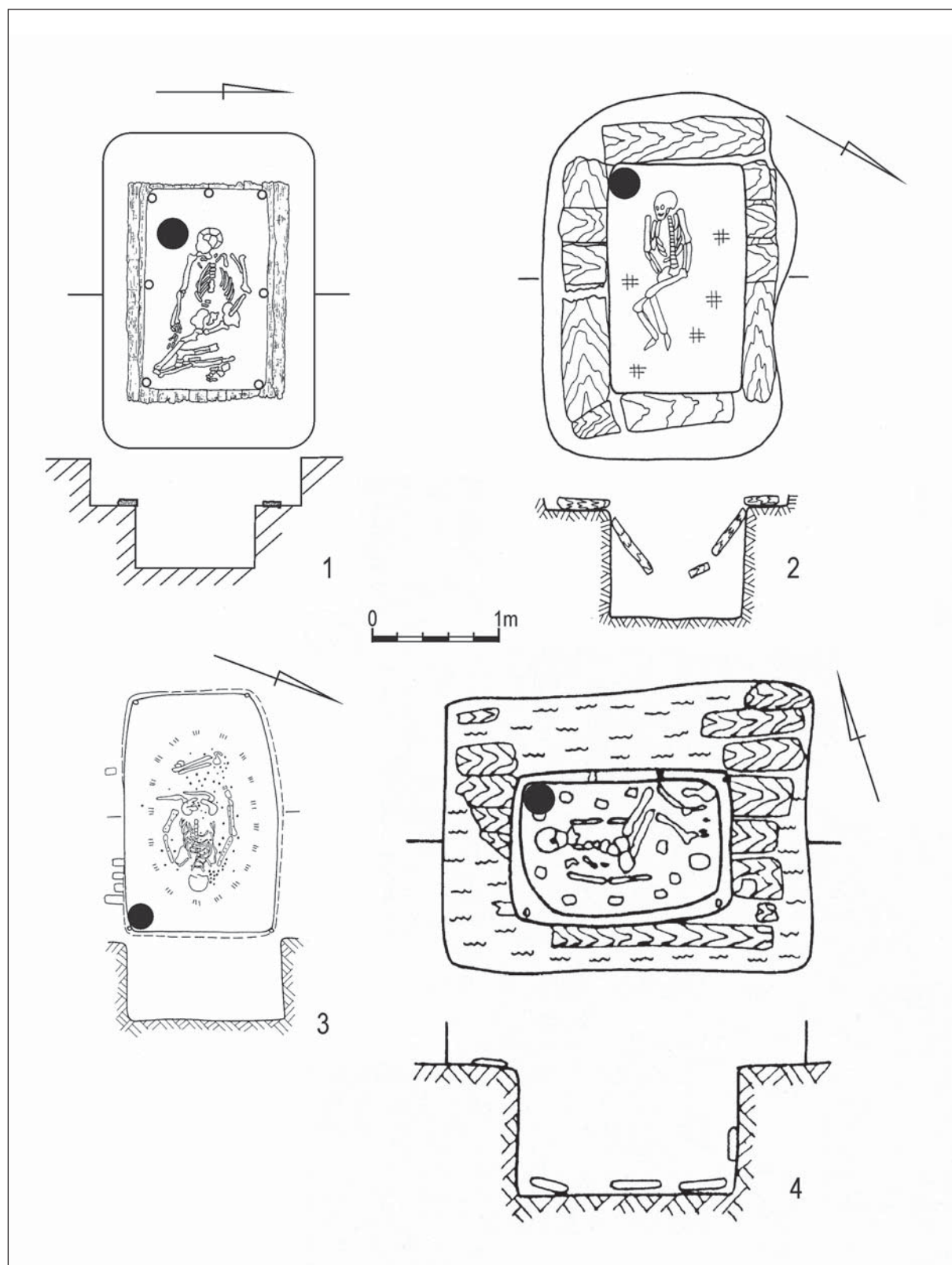


Fig. 2. Examples of the Yamnaya graves with Globular Amphora culture vessels: 1. Mocra, kurgan III/grave 4; 2. Corpaci, kurgan 2/grave 7; 3. Ocnița, kurgan 1/grave 3; 4. Mărculești, kurgan 3/grave 8. Black dots mark vessels. After DERGACHEV 1982; BEYLEKCHI 1992; MANZURA et al. 1992; KASHUBA et al. 2002.



Fig. 3. Vessel with traits of the Globular Amphora culture from Yamnaya graves:  
 1. Ocnița, kurgan 1/grave 3; 2. Mărculești, kurgan 3/grave 8; 3. Orhei, kurgan 1/grave 3.  
 Collection of the National Museum of History in Chișinău. Photo by G. Sîrbu

Florești district, kurgan 3, Mocra, Ribnița district, kurgan 3/4 or ornamentation patterns found e.g. in Orhei, district *loco*, grave 1/3 (SZMYT 1999, 152–161; 2013; KASHUBA *et al.* 2002). There are also few flint axes, generally a rare occurrence in Yamnaya graves, of the type close to the GAC as for instance in Camenca, kurgan 444/3 (SZMYT 1999, 160–161). In several cases, the relative chronology of graves could be established in relation to the barrow phases of construction and use. Specifically, graves in Corpaci, Ocnița and Mărculești represented the second or third phase of barrow use (DERGACHEV 1982; BEYLEKCHI 1992; MANZURA *et al.* 1992). In turn, in barrow 3 in Mocra, grave 4, containing a small amphora of a GAC type, was the last in the sequence of YC features (KASHUBA *et al.* 2002, 216). No GAC traits were recorded in the oldest YC graves in the area under discussion.

Such graves have close equivalents also in other parts of the GAC-YC frontier and can be interpreted as traces of direct contacts between the representatives of both cultures.

It would appear that between the Dniester, Prut and Siret, we can observe traits of two phenomena: a quite clear cultural border and markers of cross-cultural (maybe cross-border?) contacts. Thus, to the north of the Dniester, the Podolian subgroup of the GAC can be found, to the west of the Prut, the Moldavian subgroup and to the east of the Dniester – the YC area. Moreover, between the Dniester and Prut rivers lay a territory occupied by the YC communities that incorporated some patterns (or customs) of the GAC. These patterns may have been carried there by single persons coming from the GAC circle, but this has not been borne out by biological data yet.



### The eastern edge

On the middle Dnieper, there are both GAC sites and sites of the Yamnaya culture where single elements were identified as deriving from the GAC. The “pure” GAC sites are located on both the western and eastern banks of the Dnieper (*Fig. 1.II*).

On the western side, they were identified in the north-western forest-steppe belt, bounded by the mouths of the Irpin in the north and the Ros in the south. One of the more important artefacts found there is the ornamented so-called bone buckle from Kanev, Cherkasy district, originating probably from a GAC grave (SVESHNIKOV 1983, 36). Presumably domestic sites were unearthed at Khodosovka-Dibrova and – with lesser probability – Malopoloveckoye, both Kiev district (ŁYSENKO – SZMYT 2011). On the eastern side of the Dnieper, two such sites were identified: Kiev-Nikolskaya Slobodka III (a site of indeterminate function in Kiev district; SVESHNIKOV 1983, 36) and a likely grave from Bile Ozero 1, Cherkasy district (ROZDOBUDKO – YURCHENKO 2005).

Thus, the archaeological evidence points to the conclusion that part of the forest-steppe on the middle Dnieper was entered by GAC populations, who left behind few legible traces such as graves (probably Kanev and Bile Ozero 1) and possibly small domestic sites (Nikolskaya Slobodka III?, Khodosovka-Dibrova). Additionally, in the area in question, flint axes were found, which are very likely to derive from the GAC (SZMYT 2009). Judging by the dispersion of sites, however, the middle Dnieper area was never one of the regions permanently settled by GAC communities.

Certain clues as to whence GAC communities came to the Dnieper are offered by a comparative study of traits borne by bone goods and pottery. Analogies to them are found in Podolia and on the Moldavian Upland and, to a lesser extent, in Volhynia. Hence, a plausible suggestion is that GAC communities reached the Dnieper partly (or perhaps chiefly?) from Podolia (along the route crossing the drainage basin of the Southern Bug River) and partly from Volhynia as well (ŁYSENKO – SZMYT 2011).

The Yamnaya graves in the region represent both the “classical” and late phase of this entity on the Dnieper. Indirect chronological clues could be provided by the radiocarbon dates for graves in Myronivka, Kiev district (KLOCHKO 1999): the oldest of these dates go back to ca. 2600–2450 BC.<sup>2</sup> However, the beginning of the YC in the region cannot be clearly defined at the moment.

In this spatial context, a special case is kurgan no. IV from Łosiatyn (now: Losjatyń, Kiev district), excavated and published by Gotfryd Ossowski (1889). In fact, this was the first evidence of connections between the YC and GAC, however, left unrecognized for many years (SZMYT 2000).

The barrow in Łosiatyn was located in the Ros drainage basin. Its central (primary) grave combined the traits of the YC (grave type, position of the body) and the GAC. The basic elements of the YC ritual were: burial pit in a barrow, wooden pit covering, presence of ochre, position of the body (foetal position on its back with flexed legs). In turn, the only reference to the GAC was found in grave goods: a single amphora of a “classical” form for this culture (however, slightly asymmetrical), alien to the YC pottery-making and bearing “classical” GAC ornamentation (*Fig. 4*).

It does not possess, however, any sufficiently “sensitive” characteristics, chronologically speaking, to enable its specific classification within the periodization of the eastern GAC group. Similarly, the form of burial, i.e. the placing of the body in a foetal position on its back, is not typical of the late YC, although it can be occasionally found there.

<sup>2</sup> I include here four radiocarbon determinations made from human bones (Kiev-5826 3875±60 BP; Kiev-5825 3810±55 BP; Kiev-5828 4010±60 BP, Kiev-5823 3895±60 BP) and ignore the only determination made from the wooden cover of a grave (Kiev-6741 4235±60 BP). Cf. KLOCHKO 1999.

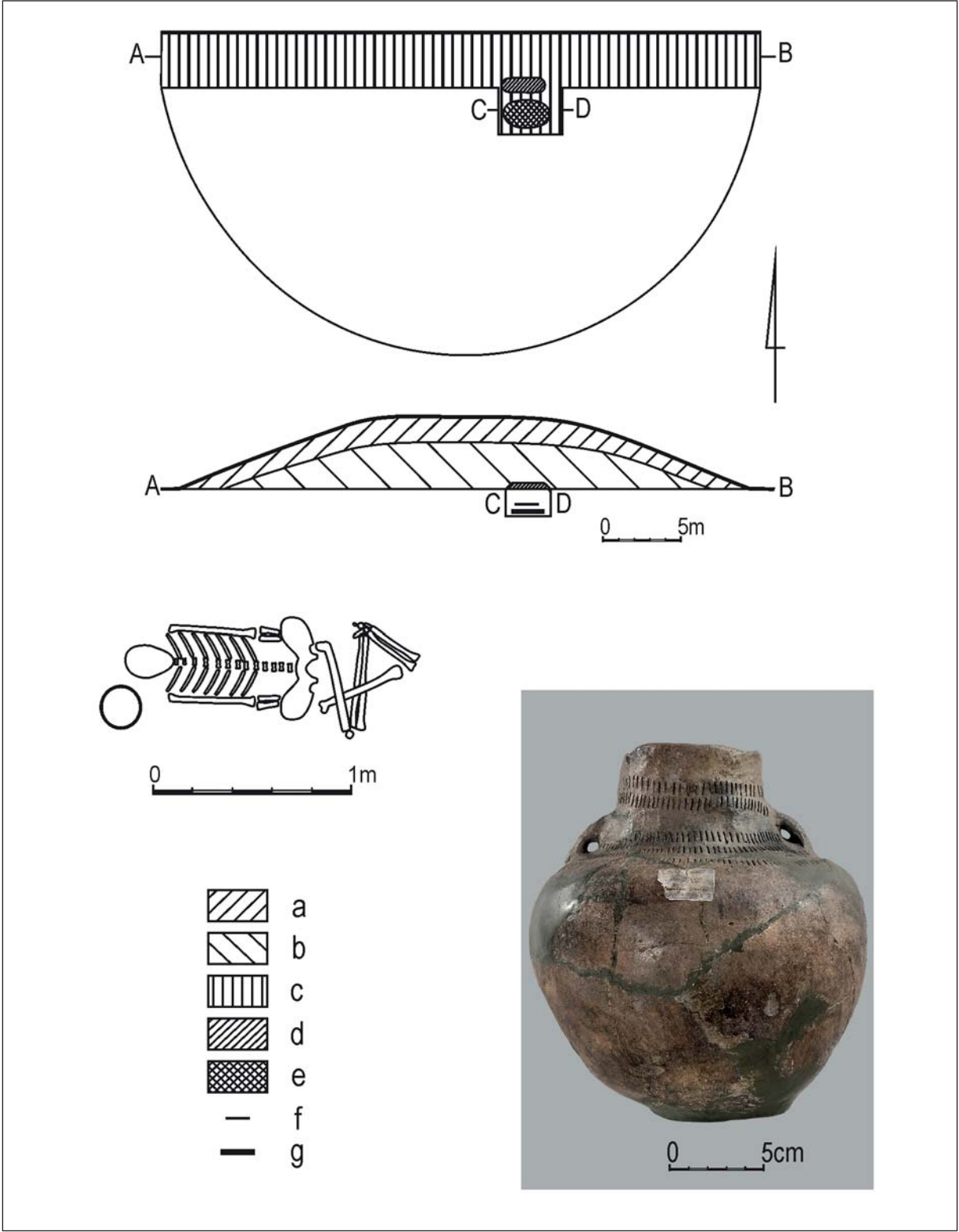


Fig. 4. A Yamnaya grave with a vessel of the Globular Amphora culture in Łosiatyn (Łosyatyn). After Ossowski 1889. Collection of the Archaeological Museum in Cracow. Photo by A. Susul.  
Key: a – chernozem; b – chernozem with clay admixture; c – excavated area; d – digging (yellow clay); e – grave; f – belt of rotten tree bark; g – skeleton



Fig. 5. Examples of flint axes and chisels possibly linked to the Globular Amphora culture in Vinnitsa district: 1. Orlivka; 2. Bushinka; 3. Yaroshinka; 4. Meleshiv. Collections of museums in Tulchin (1, 3), Tyvriv (2) and Vinnitsa (4). Photo by M. Ignaczak. After SZMYT 2009

The Łosiatyn evidence (primary grave under a barrow) could suggest the relatively early chronology of the GAC-YC connections. However, due to the loss of bones and other organic remains, the absolute chronology of the Łosiatyn grave cannot be determined.

### The central part of the forest-steppe frontier (III)

Compared to the situation on the Dniester and Dnieper, the situation in the forest-steppe section of the Southern Bug drainage basin (*Fig. 1.III*) is not clear, despite the confirmed presence in the region of both GAC and YC communities. Specifically, GAC graves and sites are found there, as well as occasional finds of single vessels or flint axes (*Fig. 5*). For the most part, however, these are old random finds; to make matters worse, archival information concerning them is fragmentary. The same is true for the YC; in this case as well, all we have is meagre data on old finds.

A major cluster of GAC graves, forming an eastern branch of the Podolia subgroup, was identified on the upper Southern Bug, close to the city of Khmelnytskyi. The group comprised stone cists, all random discoveries, holding several human burials. The graves were located in the following localities: Gorbasiv, Letychev, Novaya Siniava, Ilyatka and Zaychiki, all in Khmelnytskyi district (SVESHNIKOV 1983; MALEYEV 1986; ZAKHAR'JEV 2015). The southernmost GAC grave was found in the village of Tartak, Vinnitsa district. It was a pit sunk into the ground, lined with limestone slabs and covered with a single top slab. The chamber held the remains of two deceased next to which three vessels had been placed (SITSINSKIY 1930). No clear contexts are available for GAC clay vessels preserved complete or in fragments, for instance, in Samchyntsy and Vinnitsa, both in Vinnitsa district (SVESHNIKOV 1983). Flint axes and chisels, or their fragments, found in Golodky, Nikiforivtsy, Noskovtsy, Perepilchchyntsy and Zhmerynka in Vinnitsa district do not have clear contexts either (SZMYT 1999).

Only the grave with multiple individuals in Ilyatka (in which four bone buckles were found near the deceased, *Fig. 6*) has been chronometrically examined so far (MATHIESON *et al.* 2018). Radiocarbon dating for three individuals out of seven buried in this grave was obtained. They indicate the use of the



*Fig. 6. The so-called bone buckle from a Globular Amphora grave in Ilyatka, Khmelnytskyi region. Collection of the Regional Museum in Khmelnytskyi. Photo by P. Włodarczak*



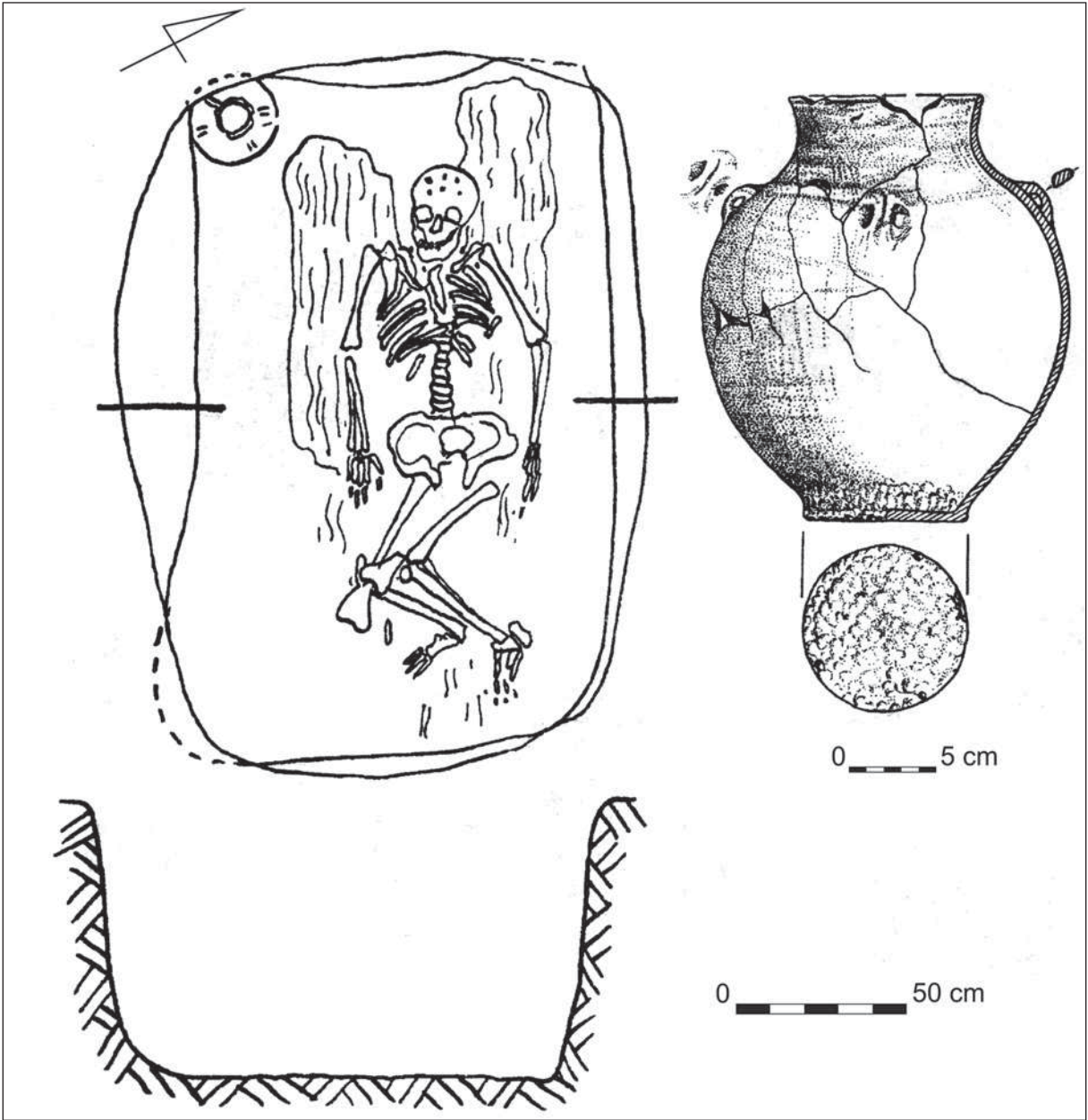


Fig. 7. Kochubeivka, kurgan 1/grave 9, Cherkasy district. Grave of the Yamnaya culture with a vessel linked to the Globular Amphora culture. After BIDZILYA *et al.* 2005

grave during the period 2900–2694 BC, i.e. in the early phase (PA) of the Podolian subgroup (SZMYT 1999, Fig. 17).

YC sites are numerous above all in the steppe section of the Southern Bug drainage basin (SHAPOSHNIKOVA *et al.* 1986), but many are recorded in the forest-steppe as well. The latter comprise mainly sites situated on the northern section of Southern Bug tributaries: the Siniucha and Ingul. The YC people appeared here most likely ca. 3000–2900 BC, which is indicated by the absolute (radiocarbon and dendrochronological) dating of barrows, located in the basins of the Southern Bug and Ingul rivers (BIDZILYA *et al.* 2005, Table 1; NIKOLOVA – KAISER 2009). However, there are also data indicating a

relatively late presence of the YC in the area (e.g. the dating of the barrow in Talyanki, Cherkasy district: 2500–2300 BC; KLOCHKO – KRUTS 1999, 79).

On the upper section of Southern Bug, in contrast, only two barrows were investigated as long ago as in the late 19<sup>th</sup> century, both located in Tokarivka, Vinnitsa district (SIETSINSKIJ 1901, 27). Each was found to contain a single grave built of two vertical slabs covered by a horizontal one. One grave yielded a polished stone shaft-hole axe while the other was found to hold two flint axes, pottery shards and timber debris. The graves are sometimes linked to the YC, but are occasionally connected to the GAC as well (e.g. SVESHNIKOV 1983, 54). Given, however, the meagre information available on them, it is by no means possible to settle the issue of the cultural attribution of the Tokarivka burials. Neither can it be ruled out that they were syncretic features.

However, until now, only one grave (no. 9) in barrow 1 at Kochubeivka, Cherkasy district, has brought the much-needed evidence. This consists of a clay vessel, similar in form to amphorae, that was deposited in a grave sunk into the older mound (*Fig. 7*). The grave is younger than the other Yamnaya graves in this barrow, but probably older than the graves associated with the Middle Dnieper culture (BIDZILYA *et al.* 2005, 119).

Summing up, in the forest-steppe section of the Southern Bug drainage basin, only the Kochubeivka grave can be included in the series of features, known from other regions, combining the YC and GAC traits.

### Contacts across the frontier

In sum, all the discussed cases clearly evidence direct connections between the communities of the YC and GAC. This is a logical consequence of the analysis of the grave traits. They follow “Yamnaya” ritual rules and the only atypical (= “alien”) object is a clay vessel more or less corresponding to the GAC style, much less frequently it is a polished flint axe. So far, such graves have been recorded in three parts of the forest-steppe, namely:

- In the west – between the Prut and Dniester rivers (as exemplified by the graves in Corpaci, Mocra, Ocnîța, etc.);
- In the east – on the right-bank section of the middle Dnieper basin between the confluences with the Desna and Ros rivers (as exemplified by the grave in Łosiatyn);
- In the centre – between the middle section of the Southern Bug and Siniucha rivers (as exemplified by the grave in Kochubeivka).

It seems that the direct contacts of both communities took place in the peripheries of regions entered by them, namely in the forest-steppe. As can be seen from the dispersion of sites, only in the western part of the forest-steppe zone, a clear frontier between areas dominated by the YC communities and those controlled by the GAC groups could be reconstructed. It followed the Prut and the middle section of the Dniester, but, of course, did not prevent contacts.

Reverse connections are not so easy to find. For instance, in the closest GAC subgroup (Podolian), no “Yamnaya” traits could be found, while they were identified in the north – within the Volhynia subgroup. They are exemplified by the use of ochre in some Volhynian graves dated after 2700 BC (SZMYT 1999, 165–167).

In the other two cases, due to scanty evidence, a more accurate drawing of the frontier line is not possible. Even more difficult, in the absence of any direct radiocarbon dates, it is to determine the absolute chronology of the graves in question. Considering the assessments of relative chronology made above, it appears that in both the west (Pрут – Dniester) and on the Southern Bug, the traits looked for are

not encountered in graves representing the oldest YC phase, but rather in younger or even the youngest features in local sequences. Hence, it can be tentatively suggested that the trait transfer happened after 2800–2700 BC. Whereas, in the forest-steppe on the Dnieper, the oldest confirmed YC barrows are dated to an even later date such as ca. 2600 BC. This means that the Łosiatyn grave, even though relatively early and primary in its barrow, could have been built at that time.

### Stone cist graves as a common phenomenon?

Additional information is obtained by analysing a very specific form of graves, namely stone cist graves (Fig. 8). A review of such graves on the forest-steppe and steppe between the Carpathians and Dnieper in the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC reveals that these features are similar in some aspects, but that they also differ significantly (SZMYT 2014). The main dissimilarities are visible in the cultural context of cist graves, especially in such aspects as the way the deceased were inhumed (orientation, arrangement), material culture in the form of grave furnishings or location relative to the ground surface (TESLENKO 2002; RASSAMAKIN 2004; IVANOVA *et al.* 2005; MELNYK – STEBLYNA 2013; SZMYT 2014).

From this point of view, the greatest differences emerge between GAC stone cist graves located in the north-western part of the forest-steppe and those known from the steppe zone. Thus, in terms of the number of the individuals, the former clearly stand out. Thirty to seventy percent contained the remains

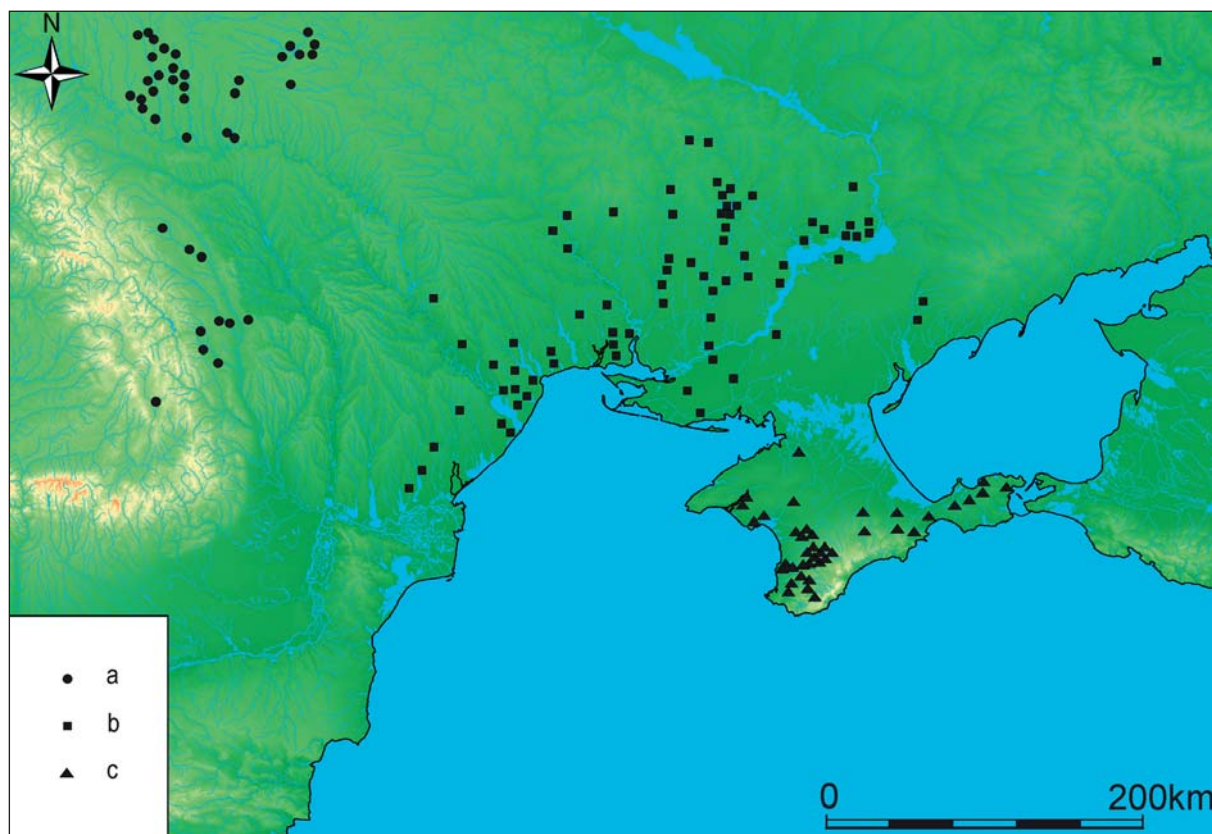


Fig. 8. Distribution of stone cist graves dated to 4<sup>th</sup> and 3<sup>rd</sup> millennia BC in northern Black Sea areas: a. Stone cist graves on the forest-steppe area (the Globular Amphora context); b. stone cist graves on the steppe area (Eneolithic and Yamnaya contexts); c. stone cist graves on the Crimea (the Kemi Oba context).

After SZMYT 2014, supplemented

of two or more individuals, with 20–30 percent of features holding more than three bodies. It was also in these graves that disarticulated bone remains were frequent. Whereas in the steppe zone, graves containing more than two bodies are rare and the anatomical connection of bones absolutely dominates. In turn, on the steppes, cist graves were most often located in connection to a barrow (underneath it or in its mantle). By contrast, no such connection is observed in Volhynia, Podolia and the Moldavian Upland, where cist graves were usually placed below the original ground surface.

All in all, the cultural context – for the most part the manner of inhuming the deceased, and grave furnishings – demonstrates a difference between the cist graves of the north-western part of the forest-steppe (Podolia and Prut-Siret area) belonging to the GAC and those of the steppe, linked to the late Eneolithic (mainly the Zhivotilovka-Volchansk group, cf. RASSAMAKIN 2004) and YC.

However, there are many gaps in the archaeological interpretation and especially chronometric evidence of stone cist graves. For the issues at hand, however, the most important conclusion is that in the forest-steppe there are no stone cists that could be credibly linked to the YC. An even stronger opinion can be ventured: YC communities living on the forest-steppe did not build stone cist graves.

### Conclusions: facts, gaps, and future research

Summarising the presented archaeological record, it is possible to identify the most important findings. First of all, the material evidence of direct and recurrent contacts between GAC and YC communities comes from the northern part of the forest-steppe zone, from the Dnieper as far as the Prut basin. These were frontier areas for both units.

In these frontier areas, both communities must have come into direct and close (even face to face) contact with one another. It is very likely that these contacts could have been in the form of migration of individual people (perhaps marital exchange?).

In the northwest of the forest-steppe, where most of archaeological sites attesting to the contacts in question are located, it is possible to indicate a clear borderland between lands controlled on the one hand by the communities of the GAC and on the other hand by the communities of the YC.

The main gaps in the current state of our knowledge result from the failure to perform scientific (mainly isotopic and genetic) examinations of materials from syncretic graves, displaying traits of both entities. Nor are there any systematic analyses available of clay vessels from different contexts (GAC, YC, YC + GAC), including the chemical analyses of their composition. There are many other deficiencies, resulting from many years of research of rather disputable quality and especially from the loss of organic materials, including human remains, from some of the discussed graves. New research projects are necessary, with the need becoming even more pressing not only for archaeology but also archaeogenetics. A series of recently published aDNA studies showed that people connected to the GAC had a genetic structure, representing in ca. 70 percent the so-called *ancient farmers ancestry* and in 30 percent *western hunter-gatherers ancestry* (TASSI *et al.* 2017; MATHIESON *et al.* 2018; SCHROEDER *et al.* 2019).

On the other hand, the results of newly published genetic analyses (WANG *et al.* 2019) point to the probable influx of these genes into the Yamnaya population of the north Caucasian steppe. From this perspective, it cannot be ruled out that the suppliers of this genetic ancestry could have been not only populations hailing from the western Black Sea Coast, but also GAC groups.

The research results presented in this article show the forest-steppe from the middle Dnieper basin to the Prut to have been the area where the populations of both units came into direct contact. Certainly, it is in this area, too, that the search for the traces of a possible direction of gene transmission should



continue. It involved the input of genetic ancestry of *ancient farmers* and *western hunter-gatherers* to steppe population and perhaps also in the opposite direction: from the steppe into GAC communities.

### Acknowledgements

Many thanks to Marcin Ignaczak, Ghenadie Sîrbu and Piotr Włodarczak for their friendly and valuable help. The work is part of the projects financed by the National Science Centre, Poland, no. 2017/27/B/HS3/01444 ‘Podolia as a contact area in the 3<sup>rd</sup> millennium BC: Kurgans on the rivers Murafa and Riv’.

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# Eastern impulses in cultural and demographic change during the end of the south-eastern Polish Eneolithic

PIOTR WŁODARCZAK

## Abstract

*New research on Final Eneolithic and Early Bronze Age communities in south-eastern Poland (3<sup>rd</sup> millennium BC) makes it possible to distinguish the stages of increased migration processes related to the emergence of eastern European populations of steppe origin. The oldest stage is represented by burials from a barrow in Hubinek in the western part of the Volhynia Upland (ca. 3000 BC). Three graves with Yamnaya culture features were discovered there. The second stage is related to the barrows of the oldest horizon of Corded Ware culture (ca. 2900–2700 BC). In the third period, burials in catacombs appear, showing similarities to the features of Katacombnaya culture (ca. 2550–2400 BC). In these graves there are also finds with Middle Dnieper culture features. The fourth migration trend is represented by Bell Beaker culture burials (ca. 2400–2250 BC). Although they have analogies primarily in the Central European region, there are also elements that prove cultural connotations with Eastern Europe. The last wave is represented by burial mounds from the beginning of Strzyżów culture (around 2000 BC). A barrow in Stryjów in the Lublin Upland is typical of them. This youngest barrow trend is probably connected with the western expansion into the Volynhia and Podolia areas of the Babino steppe community.*

**Key words:** *Final Eneolithic, Corded Ware culture, Yamnaya culture, Katacombnaya culture, funeral rite, south-eastern Poland*

## 1. Introduction

The issue of migration of prehistoric communities has been revived in recent years thanks to works discussing the results of aDNA research. They emphasized the theory about the steppe roots of the Central European population of Corded Ware culture (CWC) and the key role of the “massive” western migration of the Yamnaya communities (ALLENTOFT *et al.* 2015; HAAK *et al.* 2015). There is no doubt that the results of genetic research have created new, previously unattainable perspectives and allow us to treat prehistoric migrations not in terms of speculation, but as indisputable facts (KRISTIANSEN *et al.* 2017). In the environment of European prehistorians, short publications of sources with the results of genetic analyses presenting simple explanations of the demographic processes have also provoked polemics indicating the inadequacy of the models used: as oversimplified, “archaic”, or inadequate (among others, FURHOLT 2018; HEYD 2017). The subject of the discussion was the migration mechanism (including the problem of its “mass”), the length of the process and the limitation of its essence to the relationship between CWC and Yamnaya cultures. The mere identification of “real” communities with archaeological culture structures built by archaeologists also raises doubts (FURHOLT 2018). Therefore, it was right to attempt to clarify models of migration processes in the 3<sup>rd</sup> millennium BC (KRISTIANSEN *et al.* 2017). In the attempts to both construct and deconstruct models that assume the importance of

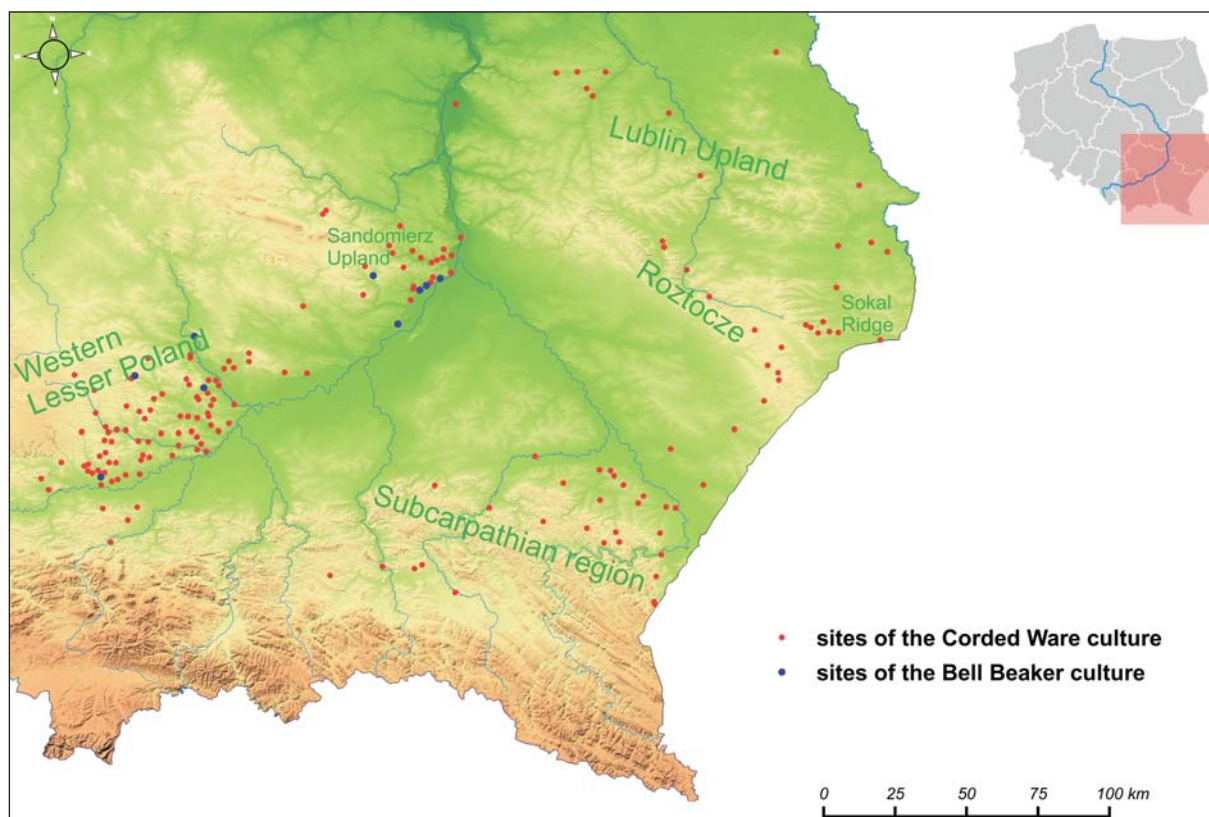


Fig. 1. Final Eneolithic grave sites in south-eastern Poland

migration in the 3<sup>rd</sup> millennium BC, the lack of a good study of archaeological sources remains a problem. This drawback results from both a scarcity of appropriate sources and a lack of analyses adequate to undertake the outlined considerations.

In the works of Marija Gimbutas, which refer to the migration concept, attention is drawn to the long-term duration of the analysed trend: in the whole Eneolithic and the early Bronze Age, steppe communities migrated into Europe, and the researcher calls the periods of increased intensity “waves” (summary: GIMBUTAS 1979). The criticism of many scholars concerned various weaknesses in this concept. On the other hand, in subsequent decades since the creation of this theory, the fact that cemeteries (usually barrows) with steppe roots arose in different European regions, dated from the turn of the 5<sup>th</sup> and 4<sup>th</sup> millennia BC to the end of the 3<sup>rd</sup> millennium BC, came to be more and more recognized. For researchers dealing with the problems of barrow communities, it is obvious that cemeteries of the CWC are not an effect of the oldest wave of steppe migration into Europe. However, most of the early-dated examples of the barrow trend come from the Danube-Tisza zone of expansion of the steppe communities. North of the Carpathians, the longevity and diversity of “eastern” influences in the funeral ritual is well-illustrated by the example of Eneolithic and Early Bronze Age cemeteries from south-eastern (SE) Poland from the 3<sup>rd</sup> millennium BC.

In south-eastern Poland archaeological finds from the Final Eneolithic period (ca. 2800–2400 BC) are primarily graves (Fig. 1). The sites form several concentrations, the largest of which is a grouping in loess areas located on the left bank of the Vistula River (MACHNIK 1966; WŁODARCZAK 2006; BUDZISZEWSKI – WŁODARCZAK 2010). Other concentrations are also associated with loess territories: the Lublin Upland, the western edge of the Volynhia Upland (Sokal Ridge), and the Subcarpathian

zone. The specificity of this macro-region is the richness of materials related to CWC (over 400 graves) and relatively few finds of Bell Beaker culture/BBC graves (32 graves, only in the western part of Lesser Poland). Sites presenting transitional features between the Late- and Final Eneolithic, described as the “Złota type of cemeteries” (KRZAK 1976), are documented only in the north-western part of the discussed area (mostly in the Sandomierz Upland).

The area of south-eastern Poland is geographically clearly limited from the north and west by lowland areas and from the south by the Carpathian chain. On the other hand, there is no clear border to the east: the loess-covered upland continues there and forms the core of Volhynia and Podolia, located in western Ukraine. The consequence is the presence of CWC cemeteries with features similar to those from south-eastern Poland (especially barrow graves). However, they are still very poorly recognized (SULIMIRSKI 1968; SVESHNIKOV 1974). Therefore, the cemeteries from south-eastern Poland form the most numerous and best-recognized group of Final Eneolithic finds in the eastern part of Central Europe. However, these data are clearly poorer than the richest agglomerations of the western and southern parts (Bohemia, Moravia, Central Germany). The informational value of finds from south-eastern Poland is increased by the significant percentage of graves discovered during planned archaeological research, the relatively good preservation of skeletons, which enables the application of many specialist analyses, and the exceptionally rich grave inventories. The particular features of the funeral rituals are noted in finds from various regions of Europe. However, in the case of south-eastern Poland, their distinctive connection with the rituality of the communities living in the North-Pontic steppe/forest-steppe zone is noteworthy.

## 2. Stages of cultural development

Based on research of cemeteries, it is possible to distinguish for the analysed area five stages of Eastern European relations (“waves”) here. Wave no. 1 is known as “Precorded”. The second wave is related to early CWC barrows. The third phase consists of cemeteries of the catacomb graves related to the late CWC. Wave no. 4, the most enigmatic, is connected with the Bell Beaker trend. Finally, the last migration is marked by barrows of the communities dated to the turn of the 3<sup>rd</sup> and 2<sup>nd</sup> millennia BC (beginning of the late phase of Mierzanowice culture complex and Strzyżów culture).

### Wave no. 1

The first stage of the arrival of the barrow communities in south-eastern Poland is dated around 3000–2900 BC – if we do not consider the circular mounds associated with the Funnel Beaker culture, which are also known from western Lesser Poland (TUNIA – WŁODARCZAK 2011). The possibility of combining Funnel Beaker culture mounds (ca. 3500 BC; among others, Baalberg barrows) with the steppe trend is a separate issue which goes beyond what is presented here.

For about 20 years the “Precorded kurgan horizon” has been considered only as a theoretical construction. An expression of this was the distinction made by Aleksander Koško of the “Cord Ware-X horizon”, preceding the “CWC–A horizon”, that is, “A horizon” of CWC in the context of European research (Koško 2000). The concept of “X horizon” arose from the assumption that the oldest finds of the CWC present the original Central European character, so they must be preceded by kurgans with eastern steppe features. This possibility was also indicated by the fact of western expansion of Eneolithic and Early Bronze Age barrow societies, including Zhivotilovka-Volchansk, Gordinești and early Yamnaya groups, into Ukrainian Podolia and Volhynia regions. This process has recently been better recognized due to research on barrow cemeteries near Yampil, Vinnitsa Oblast (Ukraine) – on the Podolian side of



the middle Dniester area (Kośko 2015; 2017). These studies indicated a large proportion of mounds as dating from the Eneolithic age. The presence of burials presenting the tradition of Zhivotilovka-Volchansk with ceramics from the Gordinești group (phase C/II of Trypillia culture) was clearly marked. The results of radiocarbon dating indicate that this western expansion of the steppe barrow communities occurred at the end of the 4<sup>th</sup> millennium BC (ca. 3400–3200 BC: Goslar *et al.* 2015). Already at that time these groups could have appeared on the border of the loess uplands in south-eastern Poland. This is evidenced by former studies of a barrow in Zawisznia, Sokal rayon, Ukraine (near the current border between Poland and Ukraine), in which vessels of the Gordinești group were discovered (Antoniiewicz 1925). In the Yampil region, just like in the upper Prut area, these late Eneolithic groups were followed by early Yamnaya communities (ca. 3100–3000 BC). As a result, the emergence of CWC barrow communities in Podolia and Volhynia (probably around 2800 BC) had to be preceded by the expansion

of the barrow groups of the steppe populations. The zone of western Ukraine is relatively poorly researched in terms of archaeology. The CWC materials draw attention to the steppe features of some of the finds (first: types of ceramic vessels), as well as elements of the funeral ritual (e.g. presence of ochre on skeletons and on the bottoms of funeral pits; see Sulimirski 1968; Włodarczak 2014a; 2014b). This indicates a close relationship with the steppe cultural circle.

In addition, the link with the steppe/forest-steppe zone strengthened the eastern expansion of the Globular Amphorae culture (GAC) people at the beginning of the 3<sup>rd</sup> millennium BC (Szyt 1999). An area of relations between the communities of this culture and the Yamnaya culture has been documented in the middle Dniester – upper Prut area (Szyt 2000; 2003; Włodarczak 2014b). As a result, graves with features having analogies in the North Pontic zone appeared in south-eastern Poland, meaning catacomb constructions in the cemeteries of the Złota type (Włodarczak 2008).

Finally, in 2011, in Hubinek, Tomaszów Lubelski district, on the western border of the Volhynia upland (Sokal Ridge), the first barrow presenting steppe cultural features was partially excavated (investigations of Jolanta Bagińska and Jerzy Libera, until now only mentioned in literature – see Juras *et al.* 2018, supplementary materials). This barrow was built in two stages (Fig. 2). In the older phase, a small mound was erected over grave 9. It was surrounded by a



Fig. 2. Barrow no. 1 at site no. 2 at Hubinek, Tomaszów Lubelski District



*Fig. 3. Hubinek, Tomaszów Lubelski District, site 2, barrow no. 1. Grave no. 9 (primary burial).  
Photo by J. Bagińska*

circular ditch with a diameter of 9 m. Probably at approximately a similar time, graves 4 and 8 were also dug (as evidenced by their radiocarbon dating). Then the barrow was significantly enlarged. This second mound was raised above grave 5, and was later completely destroyed by a deep (possibly robbery) trench. Into a younger burial mound, feature no. 7 (a sacrifice pit with cow and sheep skeletons) was dug – probably related to the CWC. Various ceramic potsherds were found in the filling of the mound. Most of them show features of the CWC early phase (CWC-A), but single sherds present a stylistic of eastern Steppe cultures (Yamnaya?) and GAC. The three older burials (nos. 4, 8 and 9) present ritual characteristics of the Yamnaya culture (*Fig. 3*). They were coloured with ochre and laid without equipment. The position of the deceased is also characteristic: on the back with bent lower limbs and the knees originally pointing upwards. These three burials were discovered in irregularly rectangular pits of medium depth. Traces of wooden constructions were found in them. Based on a series of five  $^{14}\text{C}$  analyses, graves nos. 4, 8 and 9 are dated to around 3000 BC. Grave no. 7 presented a younger age of ca. 2800–2600 BC, which corresponds to the weakly recognized trend of animal burials combined with the older CWC phase.

Hubinek is therefore the only example of a steppe barrow both in south-eastern Poland and throughout the upland zone of Central Europe. At the same time, it is the only barrow dating to around 3000 BC. It is proof of the early penetration of the highlands of south-eastern Poland by groups of people presenting an eastern European steppe origin. Their association with the Yamnaya complex is likely, although – considering the absolute dating of the Hubinek graves – their late Eneolithic attribution may also be considered. The details of the deceased's arrangement (in particular the position of the upper limbs – *Fig. 3*), as well as the structure of the burial pits is not typical for the older phase of the Yamnaya in the North-West zone of the Pontic region (WŁODARCZAK 2014a, 271–273). These features find analogies either in the younger phase of the Yamnaya culture (ca. 2800–2600 BC) or in burials presenting Eneolithic traditions. The latter are also registered at the beginning of the 3<sup>rd</sup> millennium BC (IVANOVA 2015).

### Wave no. 2

The second migration trend (around 2800–2600/2550 BC) is connected with the appearance of barrows of the older phase of the CWC. At this time, they are also present in the youngest GAC cemeteries and graves of the “Złota type” – showing the state of transition from Late to Final Eneolithic. The barrows of the CWC were usually treated by Polish scholars as an allochthonous phenomenon related to the migration of Final Eneolithic communities from the Eastern European zone (e.g. MACHNIK 1966; KRUK 1973; KOŚKO 2000; WŁODARCZAK 2006). The general idea of a central barrow grave – a chamber built most often with the use of wooden elements, and the characteristics of burial (head orientation to the west, crouched position on the back) – finds analogies in the ideology of steppe communities, including Yamnaya culture (WŁODARCZAK 2014a; 2014b). On the other hand, the details of grave construction, the lack of ochre application in the funeral ritual, the type of grave equipment, and the technological and stylistic features of the finds were usually considered as local Central European features (e.g. MACHNIK 1966; KEMPISTY 1978).

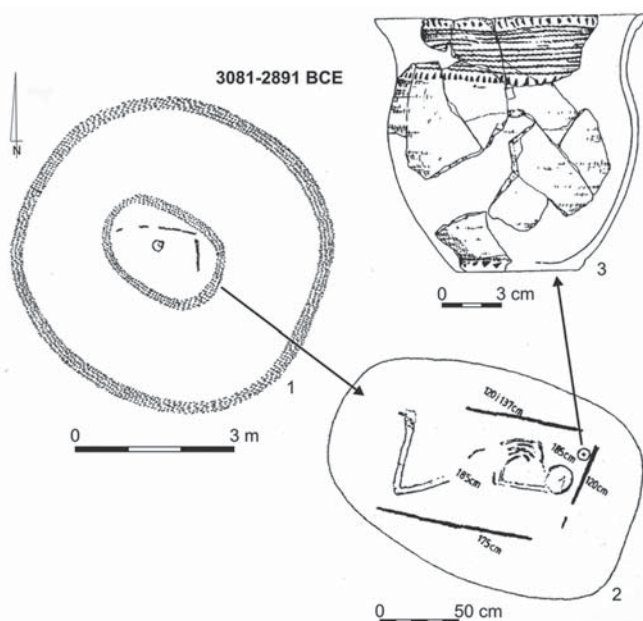
The skeletons from the barrows of the oldest phase of the CWC – from south-eastern Poland and from other regions of Europe – has not yet been the subject of specialised bioarchaeological research. The reason is the low number and poor quality of bone materials that can be used to perform analyses. This condition complicates the interpretation of demographic changes at the beginning of the Final Eneolithic period and the issue of CWC-Yamnaya relations.

The case of Hubinek presented above proves that horizon A (CWC-A) does not represent the earliest barrow phase in south-eastern Poland. The oldest burial mounds in this region, having the features of the CWC oldest phase, are A and B mounds from Bierówka in the Subcarpathian zone (GANCARSKI *et al.* 1986; 1990). Based on charcoal samples, they are dated to 2891–2706 cal BC and 2850–2700 cal BC, respectively (WŁODARCZAK 2018, 191). The construction of central graves as well as the elements of equipment are typical for the CWC-A horizon.

However, another burial mound that was also tested showed dates older than the results for early CWC

graves presented above, and younger than the age of a barrow in Hubinek. These interesting discoveries originate from kurgan no. 1 on site 3 in Średnia (*Fig. 4*), also in the Subcarpathian zone (MACHNIK – SOSNOWSKA 1996). Two radiocarbon dates (charcoal; big standard errors) indicate the range between 3081–2891 cal BC. There is no doubt that the barrow from Średnia connects to the initial phase of the Final Eneolithic. In this context, the differences in relation to the CWC-A horizon ritual are noteworthy: the left-sided burial arrangement, orientation of head to the east and the presence of an untypical cord decorated beaker. These features may confirm the early chronological position of the barrow in Średnia: before or during the crystallisation of the CWC-A horizon.

Other barrow graves from south-eastern Poland are diverse as well. Most



*Fig. 4. Średnia, Przemyśl District, barrow 1: 1 – plan of the barrow, 2 – primary burial, beaker from the central grave. After MACHNIK – SOSNOWSKA 1996*



of them are dated to around 2800–2600 BC. Only speculatively, older ones include burials that have features of the A-horizon, e.g. those with Thuringian amphorae are excluded. It should be concluded that the barrow graves are genetically and chronologically diverse. Based on similarities to materials from western Ukraine (Podolia and Volhynia regions), the eastern genesis of a large proportion of them is likely.

This research into barrows indicated a symptomatic trend: kurgan communities appeared in south-eastern Poland from the beginning of the 3<sup>rd</sup> millennium BC and it was only over centuries that the funeral ritual of the older CWC phase was crystallised. Equally slowly, the barrow trend extinguished: burials from the youngest mounds show a ritual found in graves from the younger CWC phase (from catacomb graves presented below). Examples are primarily graves from barrows in Ulów (Roztocze region) and Sługocin (Lublin upland), in which numerous and varied equipment was discovered (*Fig. 5*) – similar to the inventories dated to the late CWC phase (NIEZABITOWSKA-WIŚNIEWSKA – WIŚNIEWSKI 2011; BIENIA *et al.* 2016).

For the period ca. 2900–2600 BC the presence of CWC and GAC vessels in Yamnaya graves located in the forest-steppe zone is symptomatic (mostly in the middle Dniester – upper Prut area: SZMYT 2000; IVANOVA *et al.* 2014; WŁODARCZAK 2014b). This phenomenon corresponds to the intense relationships among communities representing Central European cultural traditions (CWC and GAC) and the steppe groups of the Yamnaya culture. The contact zone had to be located primarily in Podolia and more broadly in the basin of the middle and upper Dniester.

Other funeral traditions – related with the GAC and the phenomenon of Złota – are contemporary with the barrow ritual of the early CWC. They are represented by cemeteries with specific catacomb graves, combining the features of the GAC and CWC traditions. Cultural connections with western Ukraine are also observed there (WŁODARCZAK 2008).

### Wave no. 3

As in many other regions of Central Europe, graves of the late phase of the CWC predominate among the Final Eneolithic finds in south-eastern Poland. This is confirmed by the series of AMS radiocarbon dating: the vast majority of graves fall within the 2500–2300 BC range (WŁODARCZAK 2018). Comparing this summary with the data from the North-Pontic zone (e.g. RASSAMAKIN – NIKOLOVA 2008; GOSLAR *et al.* 2015), it can be expected that CWC graves presented here are younger than the kurgans of “classical” Yamnaya culture. They correspond to Katacombnaya cemeteries (for absolute dating: see KAISER 2009). This observation is important in the case of the following comments on the genesis of the late CWC communities in the discussed region.

Around 2600/2550 BC in the funeral ritual of the CWC societies from south-eastern Poland new elements appeared, indicating contact with rites of Eastern European communities. Their most important expression is the catacomb form of the grave (WŁODARCZAK 2014a, 21–27). The idea of such construction was already present in the earlier period (at the Złota type cemeteries – ca. 2900–2600 BC: KLEJN 1963; KRZAK 1976, 160–166; WŁODARCZAK 2008, 563–566). However, in this case specific types of structure appeared, having good analogies in the features of the Katacombnaya culture in the North-Pontic zone (*Fig. 6*). This is indicated by details of grave constructions (domination of the so-called T-shaped catacombs).

Along with this new construction, modifications were made to the burial arrangement (type of crouched position, arrangement of upper and lower limbs, orientation of the body) and equipment. Single graves dominate, although the number of double and multiple burials is also significant. In comparison with other regions of Central Europe, the burials from south-eastern Poland are equipped with particularly rich sets of gifts (*Fig. 7*). Particularly specific is the nature of the equipment in some



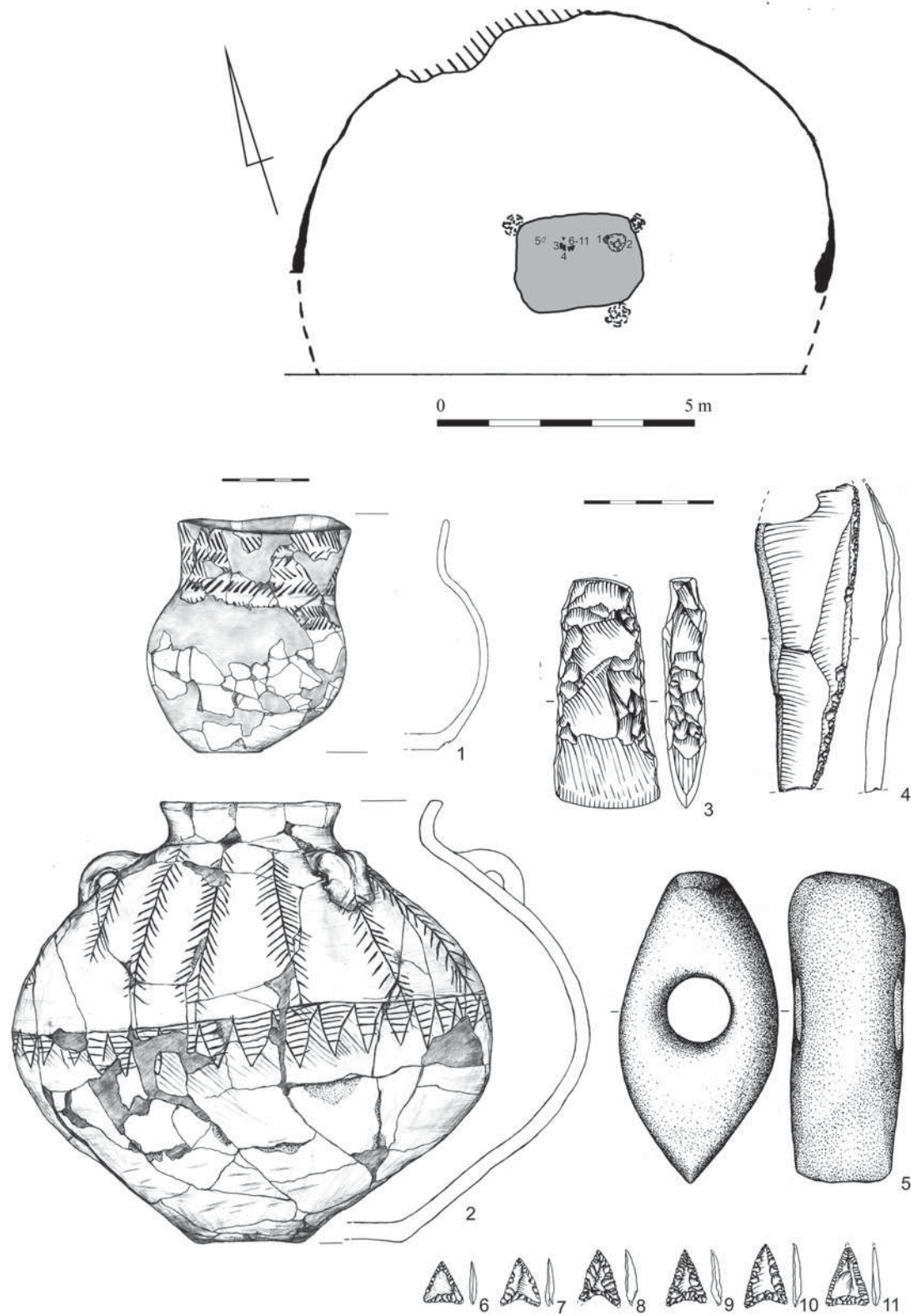


Fig. 5. Ulów, Tomaszów Lubelski District, site 3, barrow I. Primary grave and its inventory.  
After NIEZABITOWSKA-WIŚNIEWSKA – WIŚNIEWSKI 2011



*Fig. 6. Igołomia, Kraków District, site 21. Reconstruction of catacomb grave no.3 (secondary dug into the barrow). By M. Podsiadło*

graves of adult men, which include ceramic vessels (the fixed component is a large beaker with a distinct funnel or cylindrical neck), weapons (stone battle-axes and flint arrowheads), sets of flint tools (mainly axes, knife inserts and strikers), bone, horn, stone (whetstones and sanding plates) and copper tools, ornaments (including characteristic copper hair rings), as well as flint half-products (blades and flakes).

Such burials emphasize the role of a man as a warrior as well as a craftsman-specialist, whereas in the materials from south-eastern Poland the specialisation in the field of flint-knapping is often emphasised. Unlike in other Central European CWC groups, there are numerous burials of men equipped with triangular arrowheads (up to 30 pieces – e.g. *Fig. 7.5–20*). In other regions, archery sets as an important element of the male equipment appear about 100-200 years later – along with the spread of the Bell Beaker ritual.

Polish researchers of the Final Eneolithic have often emphasised the differences between older (with barrows) and younger (with niche graves) CWC phases (e.g. KEMPISTY 1978). For the latter, significant participation of local cultural groups (TRB, Baden, GAC and Złota) was assumed, reacting to the emergence of the model of the allochthonic older CWC phase (e.g. MACHNIK 1966; KRUK 1973; WŁODARCZAK 2006). At the same time, the possibility of local origin of niche graves was sometimes considered acceptable (e.g. KEMPISTY 1978), although in the 1960s there were voices emphasising the importance of the eastern connections of these structures, for example that of LEW KLEJN (1963; 1964).

In the 1990s, as a result of the accidental discovery of an exceptional grave in Młodów-Zakęcie (*Fig. 8*; MACHNIK – PILCH 1997), attention was paid to the presence of the Middle Dnieper culture traits in CWC graves from south-eastern Poland (e.g. MACHNIK 1999; MACHNIK *et al.* 2001; 2009; WŁODARCZAK 2014a; KOŚKO – WŁODARCZAK 2018). First, ceramic vessels with biconical beakers (*Fig. 8.1–3*) of eastern origin were identified (in Russian and Ukrainian called “spool-like beakers”). Then these vessels

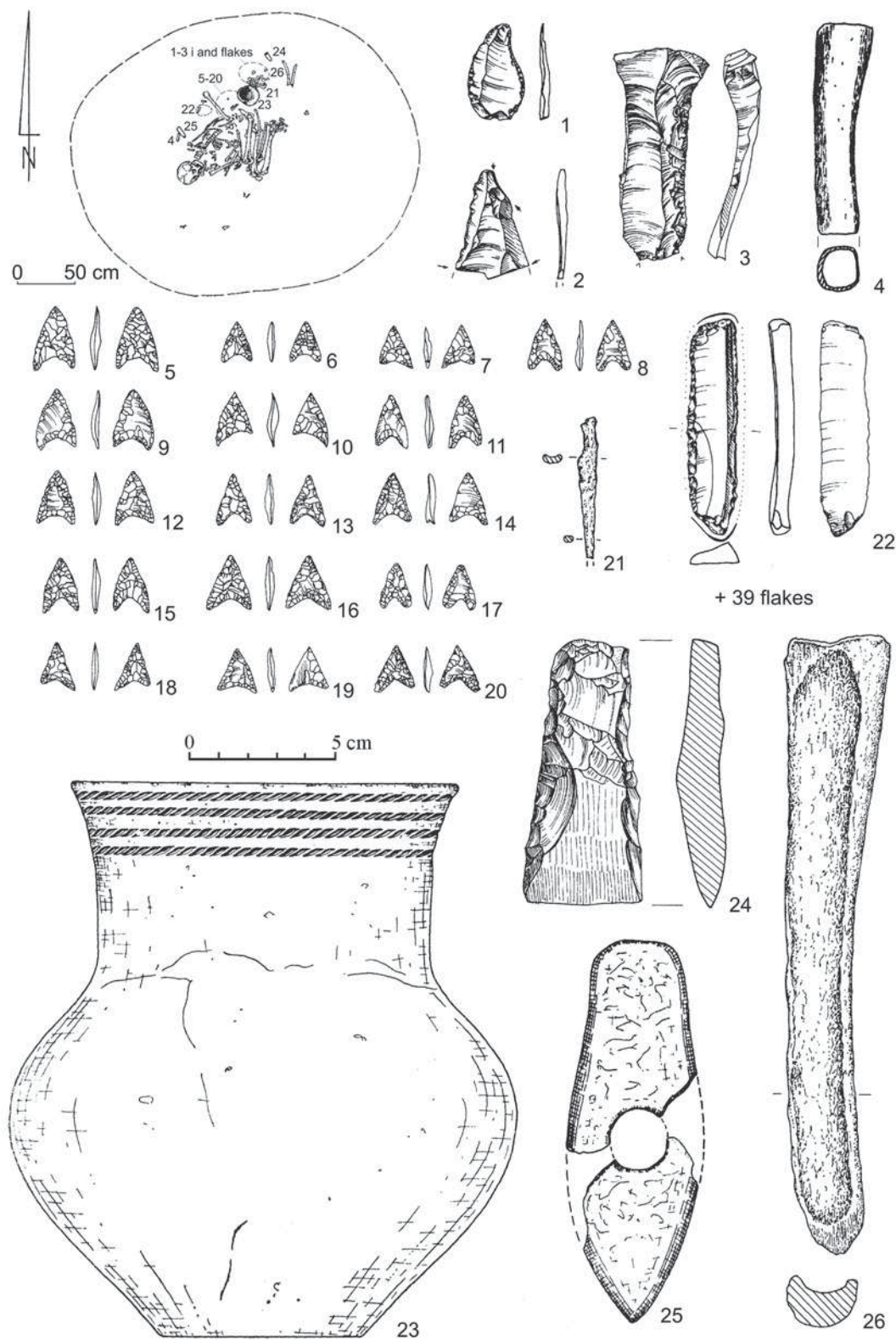


Fig. 7. Koniusza, Proszowice District, site 1, grave 3. Example of typical male equipment from western Lesser Poland. After TUNIA 1979



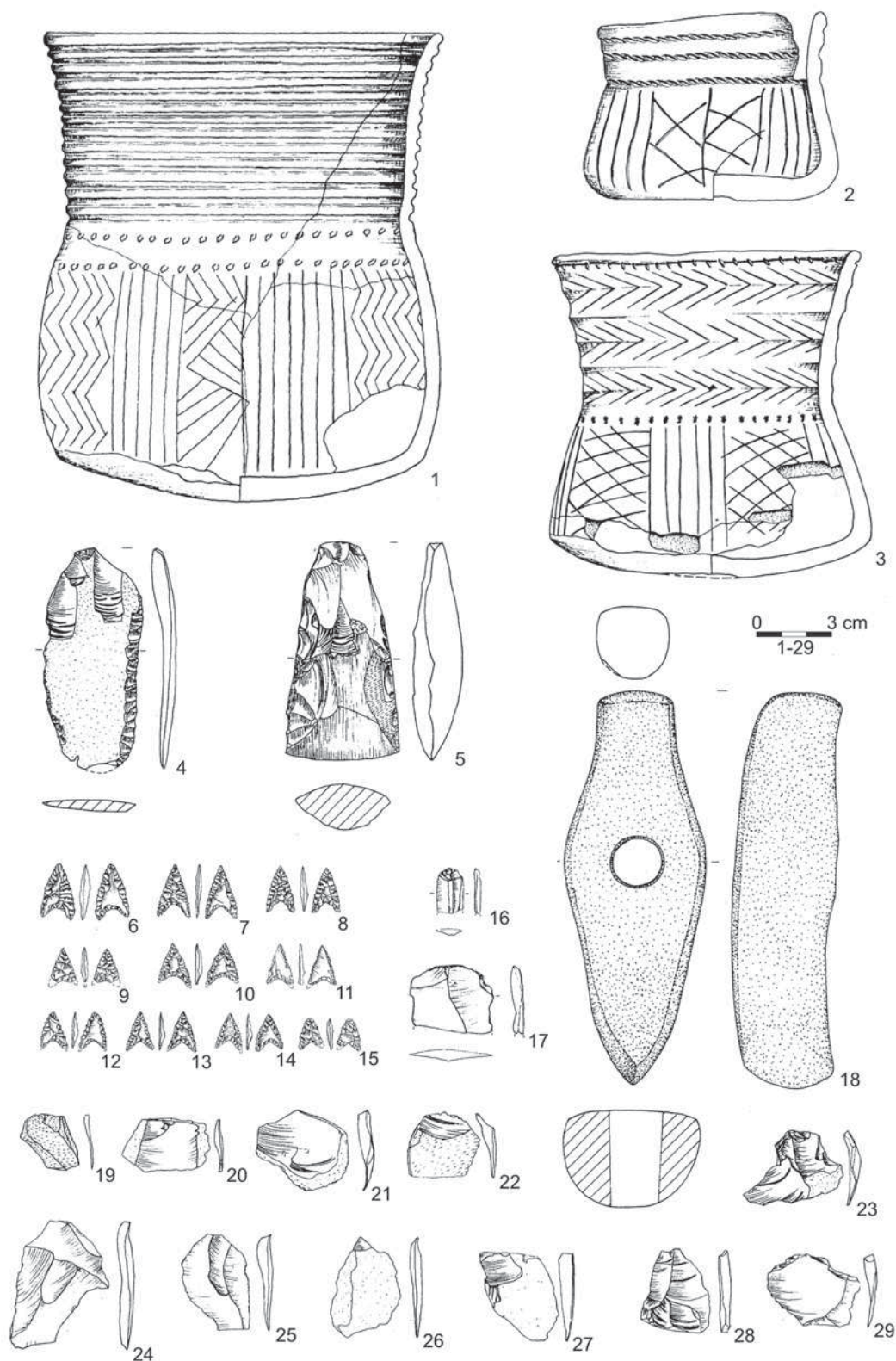


Fig. 8. Młodów-Zakęcie, Lubaczów District. Inventory of destroyed grave connected with the Middle Dnieper culture. After MACHNIK – PILCH 1997



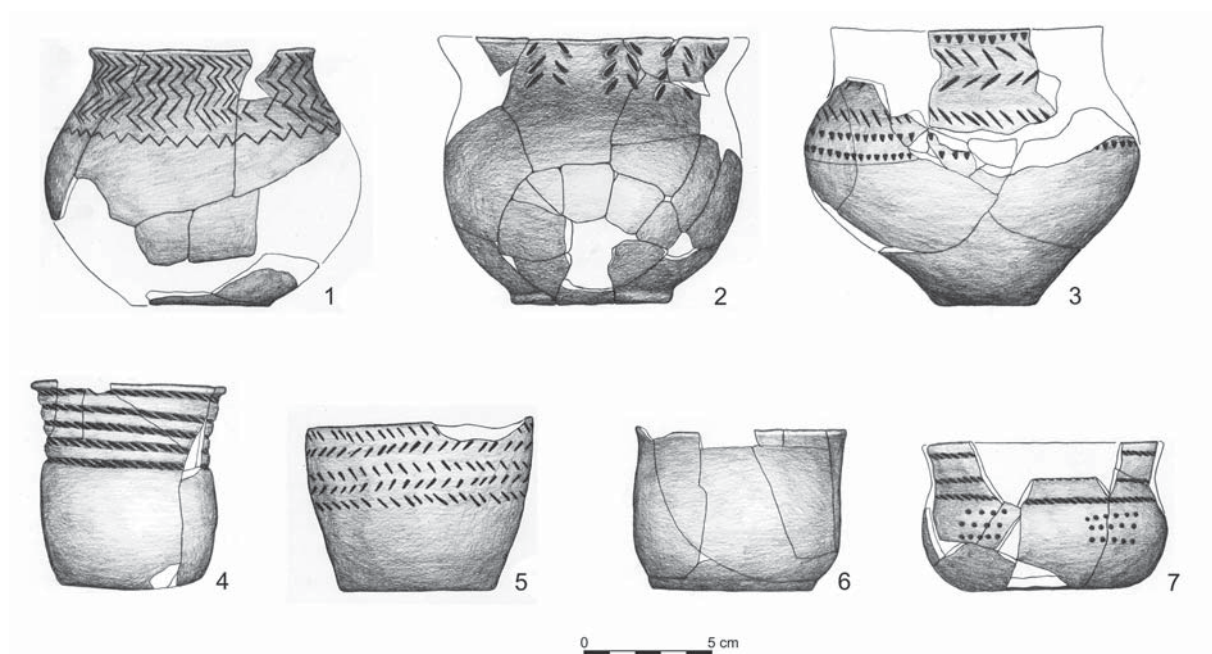


Fig. 9. Examples of vessels exhibiting “eastern” features (Middle Dnieper and Katacombnya cultures) from CWC catacomb graves in Święte, Jarosław District (sites 11 and 15).  
After OLSZEWSKI – WŁODARCZAK 2018; JANCZEWSKI *et al.* 2018

were distinguished in a dozen or so other graves from south-eastern Poland, sometimes together with local CWC types of amphorae and beakers (Fig. 9; KOŚKO – WŁODARCZAK 2018, 275–278). Therefore, the Middle Dnieper beaker was included in the group of prestigious vessels found in the best equipped male burials of south-eastern Poland CWC.

Next, a similarity between the grave equipment in the south-eastern Poland zone and in the basin of the upper and middle Dnieper river was found (WŁODARCZAK 2014a; 2017; WŁODARCZAK 2018). It concerns the presence of numerous flint arrowheads in the male burials and rich tool equipment that highlights the flint-knapping activity of the buried person (Figs 7–8). It can be assumed that the migration of the Middle Dnieper culture communities to the upper Vistula basin was an impulse to change the nature of the funeral ritual and create its specificity in comparison with the rites present at that time in other regions of central Europe.

All this information points to the conclusion that the appearance of Middle Dnieper elements took place at the stage of crystallisation of attributes typical of the classic (younger) CWC phase in south-eastern Poland, including the Kraków-Sandomierz group (MACHNIK 1966; WŁODARCZAK 2006), the Sokal group (MACHNIK *et al.* 2009), and the Subcarpathian cemeteries with catacomb graves (MACHNIK 2014).

Relations among the CWC communities with those in areas of western Ukraine are evidenced by the presence of finds made of eastern raw materials and by finds stylistically and technologically connected with those regions. Importance of flint raw materials and rocks for battle-axe production from the Volhynia area is of significant importance. Perhaps the use of Ukrainian copper deposits could also be significant. This has not yet been confirmed by specialist analysis. However, discoveries made in the past two decades in the Subcarpathian region have special significance. These are primarily finds from Święte and Szczytna.

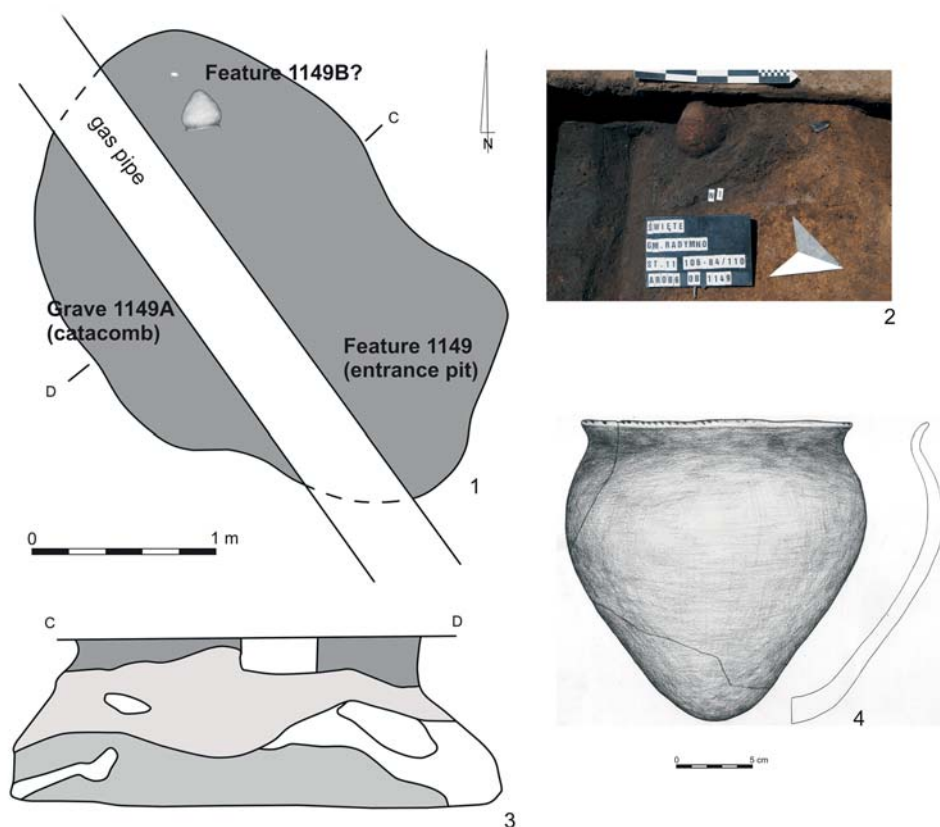


Fig. 10. Święte, Jarosław District, site 11. Feature 1149B. Discovery of vessel with round bottom in the CWC cemetery. After Kośko *et al.* 2018

At site 11 in Święte, a round-based vessel of undoubted steppe origin was discovered (Fig. 10; OLSZEWSKI – WŁODARCZAK 2018, 39–41; KOŚKO *et al.* 2018). It was found above the catacomb of grave no. 1149A. The pot was discovered in the upper part of a filling that was formed after the collapse of the catacomb. Originally, it was placed in a shallow sacrificial pit (a so-called *tryzna*), or left over the grave, on the surface. The vessel from Święte has good analogies in the cemeteries of the late Yamnaya or early Katacombnaya cultures in the zone between the Dniester and the Dnieper Rivers (Kośko *et al.* 2018, 82–86).

Importantly, analogous vessels also come from the mixed zone, from which both the graves of the Yamnaya culture and Middle Dnieper culture are known (forest-steppe between Southern Bug and Dnieper Rivers). Analogous pots were also discovered in the barrow from Jackowica (now Dolynka in Ukraine), excavated at the end of the 19<sup>th</sup> century (BYDŁOWSKI 1905, Pl. 5). These discoveries allow us to combine in one trend the western expansion of Middle Dnieper and early Katacombnaya cultural traits.

Another spectacular and important discovery of the last decade is grave no. 4 from site 6 at Szczytna in Subcarpathian region (Fig. 11), which presents the richest burial inventory from south-eastern Poland (HOZER *et al.* 2017, 38–48).

It is the quintessence of the already characterised method of equipping men's graves with ceramics (amphorae and beakers), weapons, tool kits, sets of flint flakes (probably raw material for the production of arrowheads) and ornaments (the most important being copper hair rings). As indicated, such inventories

find analogies in the middle Dnieper region. A unique find from the grave in Szczytna is a set of copper artifacts, which also includes a shaft-hole axe (Fig. 11.2–3). The latter find has good analogies in the

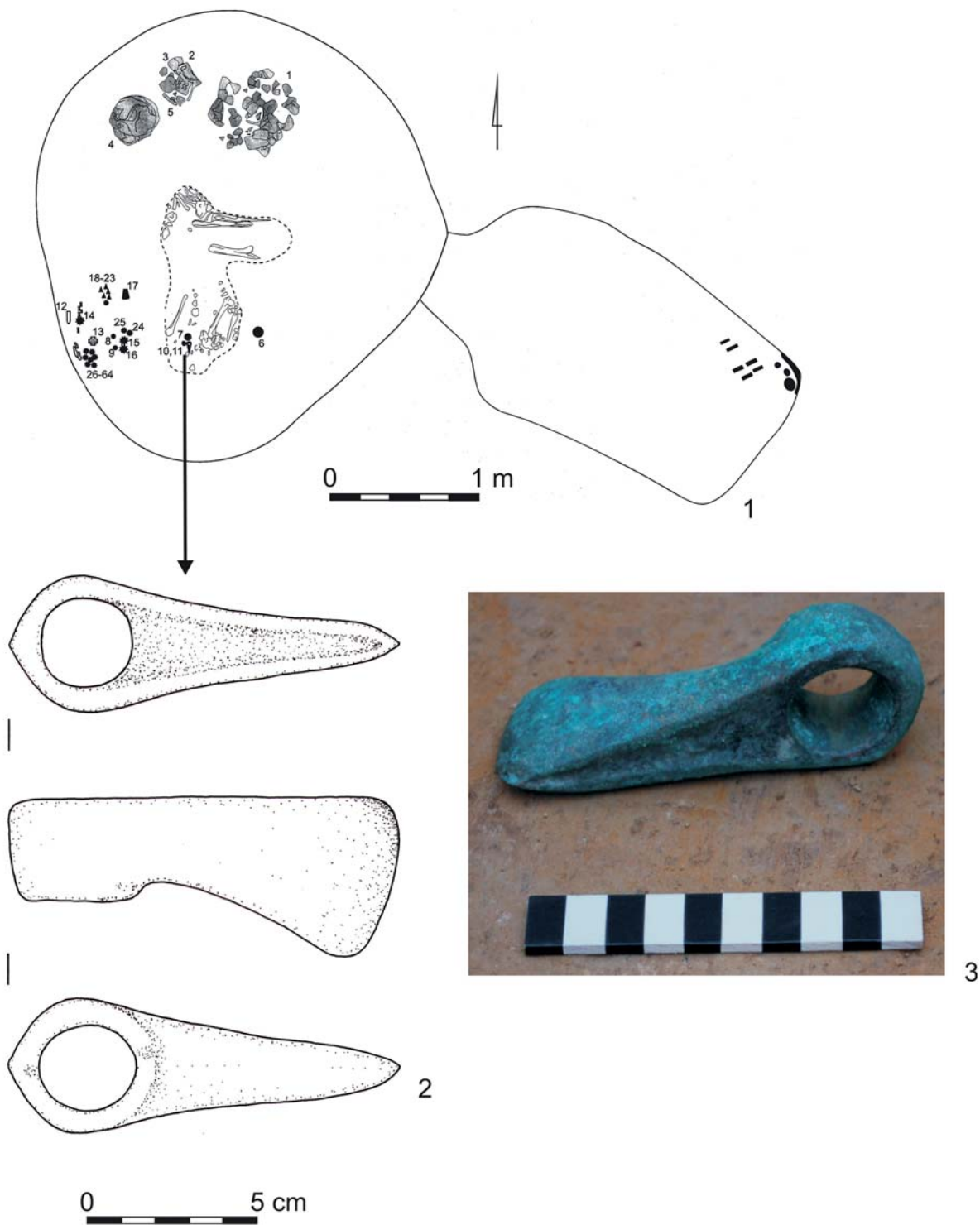


Fig. 11. Szczytna, Przeworsk District, site 6, grave no. 4. Discovery of the copper shaft-hole axe in the CWC catacomb grave. After HOZER et al. 2017

Yamnaya, Katacombnya and Middle Dnieper axes. Unfortunately, most of them are stray finds. Also especially significant are the analogy from the Yamnaya grave at Pidlissya in the Dnieper region and the similarity of some Katacombnya forms (KLOCHKO 2001; KOŚKO – WŁODARCZAK 2018, 272–273). It is symptomatic that a second grave with a copper shaft-hole axe is known from Ragachov region of Middle Dnieper culture, from the cemetery at Khodosovichi (ARTEMENKO 1967, 31, fig. 20).

The above-mentioned analyses of the funeral ritual and finds indicate that around the middle of the 3<sup>rd</sup> millennium BC we can count on the migration of people of eastern origin, from the border area between forest-steppe and forests of western Ukraine. The question is: can this claim be proved by other specialist analyses? Their results are interesting. The poor database of good comparative data is a difficult one, including the lack of data for Middle Dnieper culture and Western Katacombnya culture. Analyses of stable carbon and nitrogen isotopes show a clear difference between the samples obtained for the Subcarpathian area and for the forest-steppe zone of the North-western Pontic region (Fig. 12; SZCZEPANEK *et al.* 2018; WERENS *et al.* 2018).

In order to compare, analyses of the graves of Yamnaya, Katacombnya and Babino from kurgans near Yampil on the middle Dniester were used (GOSLAR *et al.* 2017). The samples from south-eastern Poland are more clearly grouped and indicate a typical land diet which includes C3 plants. However, the results for the graves from Yampil region are less homogeneous and show higher values of the  $^{13}\text{C}$  isotope. One attempt to explain this was a proposal assuming the inclusion of millet in the diet of the community from the forest-steppe zone (GOSLAR *et al.* 2017).

Studies of strontium isotopes were carried out in three regions of south-eastern Poland (BELKA *et al.* 2018; 2019; SZCZEPANEK *et al.* 2018; LINDERHOLM *et al.* 2020). For most burials, a local isotope background was found, indicating local origin. Only for the Subcarpathian region, and in particular for the three cemeteries in Święte and two cemeteries at Mirocin, a group of individuals of allochthonous origin was distinguished (BELKA *et al.* 2018; 2019). The isotopic data indicate that they could have come either from Sokal ridge on the eastern border of Poland or from the western zone of Ukraine (from the Volhynia or Podolia uplands). An exceptionally interesting result was obtained for double grave no. 408 from site 15 in Święte. Two women were buried in the grave, for whom close kinship was determined thanks to genetic research – probably a mother and daughter (LINDERHOLM *et al.* 2020). The remains of the “mother” found in the anatomical position in the studies of strontium isotopes indicated local origin. However, the test of the “daughter’s” bones indicates a foreign, probably eastern, origin. Most likely her incomplete remains were transported and buried in the catacomb grave as a “package”, with no regard for anatomical order.

The tests of aDNA for a longer series of skeletons from south-eastern Poland were performed recently in a laboratory in Stockholm (LINDERHOLM *et al.* 2020). They point out that unlike other CWC communities, men from south-eastern Poland show the Y-chromosomal group R1b – similarly to the populations of the Yamnaya culture (e.g. ALLENTOFT *et al.* 2015; HAAK *et al.* 2015) and local Central European Bell Beakers (e.g. from the cemetery at Samborzec in Sandomierz region of Lesser Poland: OLALDE *et al.* 2018). These results are another confirmation of the distinct character of wave no. 3, related to the late, “Catacomb” CWC societies from south-eastern Poland. Genetically the population of

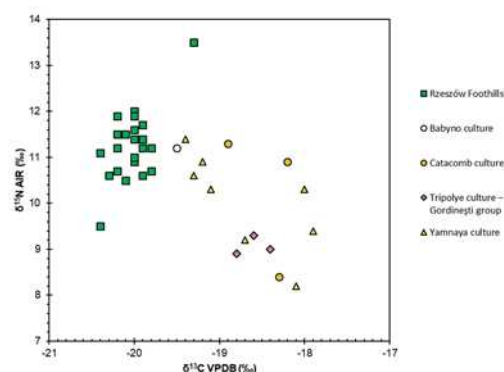


Fig. 12. Values of  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  for CWC humans from Rzeszów Foothills (Subcarpathian region) and forest-steppe diferent groups from Yampil region (Podolia, Ukraine). After WERENS *et al.* 2018



late CWC from south-eastern Poland is very similar to the groups of this culture from central Germany or northern Germany (LINDERHOLM *et al.* 2020, Fig. 3: B). Interestingly, the convergence with Yamnaya features is greater than in the case of western and lowland CWC groups. In addition, attention was paid to the similarity of the genetic features of the communities from south-eastern Poland and the Afanasievo culture (LINDERHOLM *et al.* 2020). This effect is currently difficult to interpret. Tracking archaeological data, attention can be paid to the relationship between the late CWC genesis in south-eastern Poland with the appearance of the Katacombnyaya culture population in the North Pontic area. The genetic characteristics of the latter remain unknown. It is possible that the hypothesis about its eastern origin (e.g. BRATCHENKO 2001, 61–66) is also associated with the characteristics of Afanasievo (expanding probably from the same region located north of the Caucasus). The unraveling of this puzzle has to wait for a more detailed picture of the genetic diversity of the Yamnaya – Afanasievo – Katacombnyaya populations.

In mtDNA research, attention was paid to the dual nature of genetic features: on the one hand, a significant share of new steppe impact, and on the other the presence of a continuing local trend (JURAS *et al.* 2018; LINDERHOLM *et al.* 2020). Such a situation is in harmony with the archaeological context: a new allochthonic funeral ritual is present together with elements referring to patterns from the previous period (late Eneolithic: GAC and Złota). The reference to the previous period is clear in the case of ceramics, especially amphorae and beakers. At the same time, the studies on strontium isotopes do not allow us to associate migrations exclusively with moving groups of males. To the contrary, they show the mobility of women, which can lead to a hypothesis on the exogamous system (BELKA *et al.* 2018, 253–254; compare: MÜLLER *et al.* 2009, 140; KRISTIANSEN *et al.* 2017, 338–343). It should be assumed that the groups of newcomers were joined by local residents, mainly women.

Unfortunately, comparative materials from CWC burial mounds (wave no. 2) have still not been obtained. The reason is the lack of good quality bone materials. This makes an attempt to compare expressive cultural change with population movements difficult. However, taking into account the results of archaeogenetic studies for CWC from other regions (e.g. central Germany, Polish lowland), the specific nature of the population from south-eastern Poland during the late phase of CWC – in comparison to other regions of Central Europe – is clearly documented.

In the light of the above mentioned results, the origin of the Lesser Poland communities of the younger CWC phase is connected with the migration of groups of people from eastern Europe who previously lived in the zone on the border between forest-steppe and forest. First of all, this is a region in which Middle Dnieper culture has strong connections with Katacombnyaya culture, often interpreted as a genetic relationship (e.g. ARTEMENKO 1967: 109–116; BONDAR 1991; SERDYUKOVA 1994; BUNYATYAN 2005). Unfortunately, the contact zone between these cultures (the area between the upper Southern Bug and the middle Dnieper) is still poorly researched. On the other hand, the expansion of the Middle Dnieper culture through Volhynia towards Lesser Poland is better and better readable (BUNYATYAN – SAMOLYUK 2009; MACHNIK *et al.* 2009; KOŚKO – WŁODARCZAK 2018). Currently, a scenario assuming the appearance at approximately 2600–2500 BC of a population with specific genetic features and characteristic funeral ritual (catacomb graves; way of furnishing the deceased) in south-eastern Poland is becoming probable.

#### Wave no. 4

The fourth wave, and the last one of the Final Eneolithic, is related to the Bell Beakers' impact, which coincides with the disappearance of the CWC catacomb grave idea (around 2400–2300 BC). Several BBC graves are located only in the western part of south-eastern Poland (BUDZISZEWSKI – WŁODARCZAK 2010). The nature of the equipment and the way the burials are arranged corresponds closely to the

features found in other regions of Central Europe, primarily in the Moravian BBC. The process of cultural changes is accompanied by the emergence of communities with distinctive anthropological features (primarily brachycranial) that differ from local Eneolithic populations (HADUCH 2010). The chronometric data indicate a similar age of BBC cemeteries and graves associated with the earliest stage of the Early Bronze Age (meaning early Mierzanowice culture). The burial equipment of the Mierzanowice culture contains elements typical for the BBC (e.g., stone wrist-guards, copper daggers – *Fig. 13*). Vessels of the early phase of the Mierzanowice culture (mainly cups, jugs and pots) in stylistic and technological terms also refer to the production of the communities with bell beakers (*Fig. 13.5–7*). Moreover, in this period associations of areas located in the eastern part of SE Poland with the Volhynia-Podolia Upland are clear due to imports of good quality flints. As in the North-Pontic zone, this flint is used to produce bifacial daggers (BARGIEL – LIBERA 2005). The funeral ritual of the early Mierzanowice contains elements of both beaker cultures (CWC and BBC). With a general reference to the CWC ritual, there are no features specific to older cemeteries: the details of the construction of graves, the arrangement and orientation of burials are different, and there are no specific elements of equipment from south-eastern Poland (e.g. rectangular flint axes). At the same time the general character of the male burial has remained unchanged since the CWC time: it contains ceramic vessels, weapons, tool sets, ornaments and flint raw material.

The issue of relations with the North-Pontic area in the period of 2400–2000 BC is difficult to interpret. In the foreground western and southern connections are visible in this period, presented primarily by migrations of the BBC population groups. However, it is difficult to ignore the “eastern” elements appearing in this funeral ritual (*Fig. 13.A*), as well as imports of raw materials and products from the area of western Ukraine. It is likely that also in this period cultural relations were coupled with migratory movements, to a slightly lesser extent than in the previous period. The tradition of movements across the uplands of Podolia and Volhynia was upheld at the BBC-early Mierzanowice period.

#### Wave no. 5

In 2014, as part of the National Science Center project entitled “The decline of Neolithic in the northern part of the Lublin Upland”, barrow 1 at site 30 in Stryjów, Krasnystaw district was excavated (BUDZISZEWSKI *et al.* 2016). Four individual graves were discovered under the mound with a diameter of 13 m and a height of 1.5 m, dated based on  $^{14}\text{C}$  at the turn of the 3<sup>rd</sup> and 2<sup>nd</sup> millennia BC (*Fig. 14*). Features of their construction, the way the dead are buried, as well as the characteristic of ceramics from the barrow, point to rituals of the early Bronze Age communities in the Lublin region, probably the early Strzyżów culture. At the same site, directly to the east of the above-described barrow, traces of the second mound and the central grave associated with them (feature 10) were recorded. All in all, the main result of the research was the discovery of a first barrow cemetery dated to the beginning of the Strzyżów culture. Radiocarbon dating and the characteristics of burials discovered under the barrow indicate that finds in Stryjów cannot be regarded as a continuation of CWC barrow rituals. In comparison with the Final Eneolithic ritual, in the case of burial mound 1 in Stryjów there is a visible change consisting in the placing of not one, but several separate burials. The wide ditch surrounding the mound is probably an integral structural element, limiting and giving it a lofty and monumental character. The registration of the barrow changes the image of the funeral ritual of the early Bronze Age community in Lesser Poland: at the same time large flat cemeteries (numbering even several hundred burials) were created, located in the vicinity of permanent settlements, as well as small clusters of flat graves. A similar phenomenon of the presence of a few burial mounds with a predominance of flat cemeteries is also noted in the neighbouring circle of the Unětice culture. A kurgan in Łęki Małe, Grodzisk Wielkopolski district (KOWIAŃSKA-PIASZYKOWA 2008), is dated to more or less the same period as the cemetery in

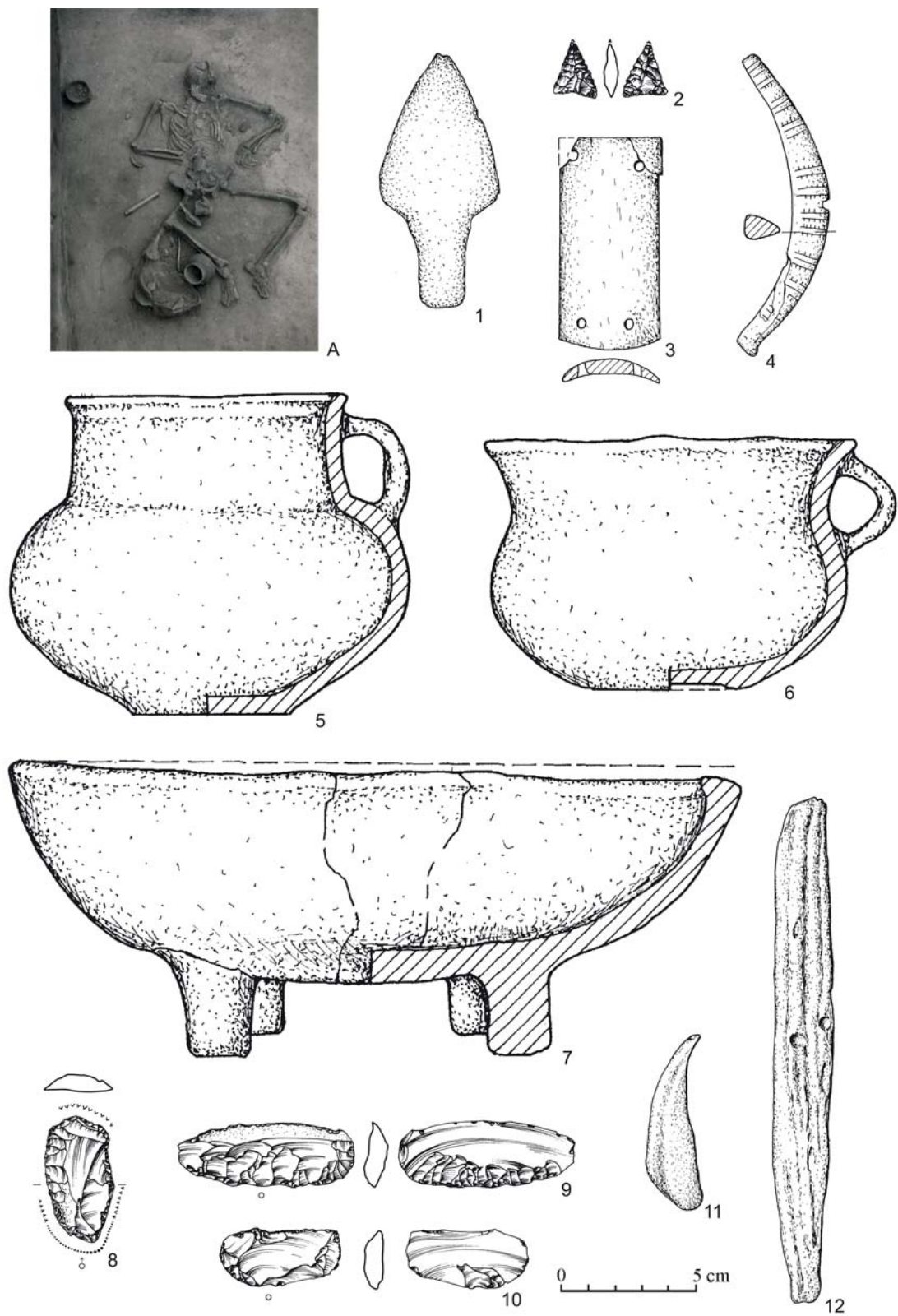


Fig. 13. Samborzec, Sandomierz District, site 1. Grave no. 3 (BBC) and its inventory.  
After BUDZISZEWSKI – WŁODARCZAK 2010

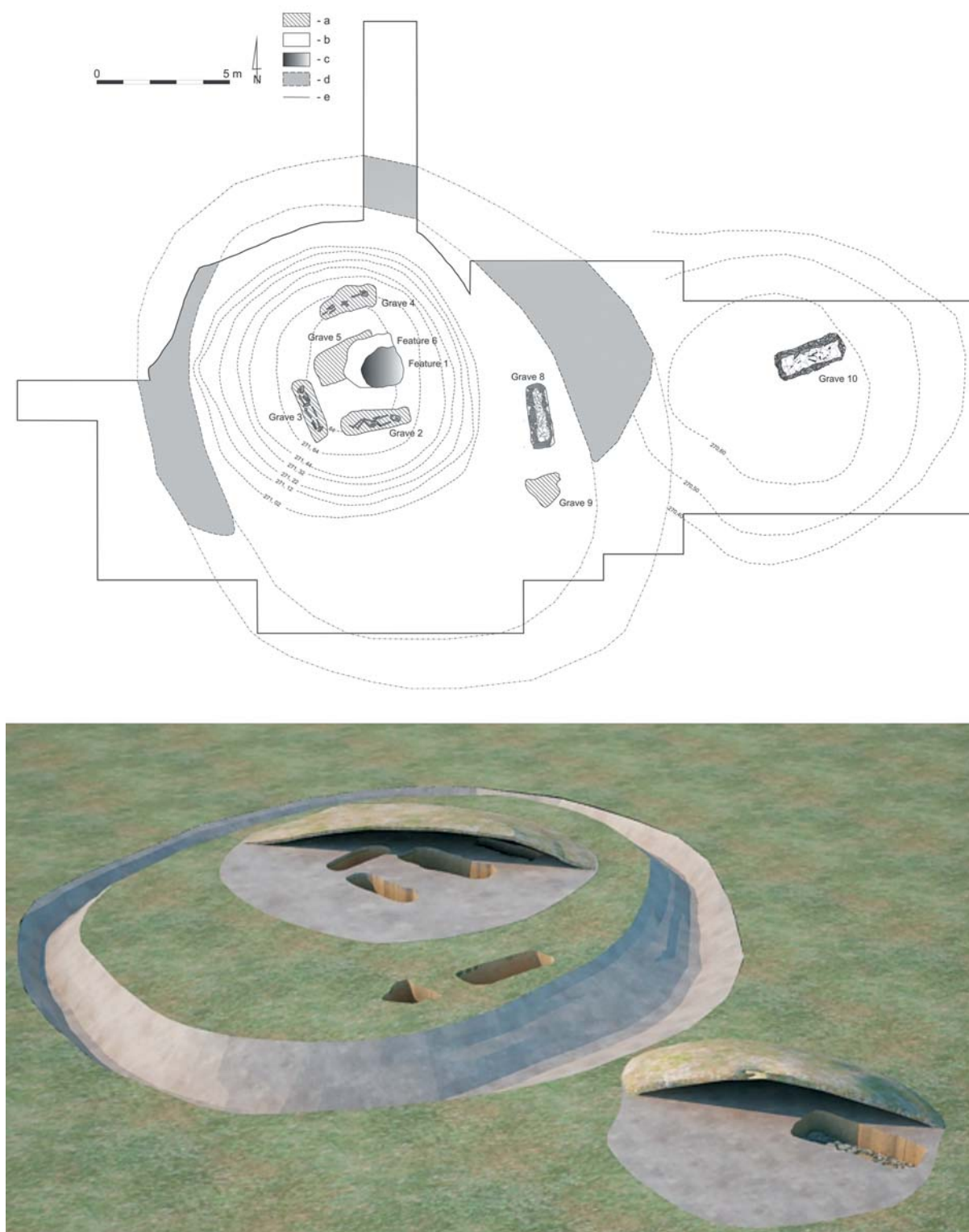


Fig. 14. Stryjów, Krasnystaw District, site 30. Barrow cemetery dated to the Early Bronze Age.  
Acc. to BUDZISZEWSKI et al. 2016, reconstruction by K. Rosińska-Balik



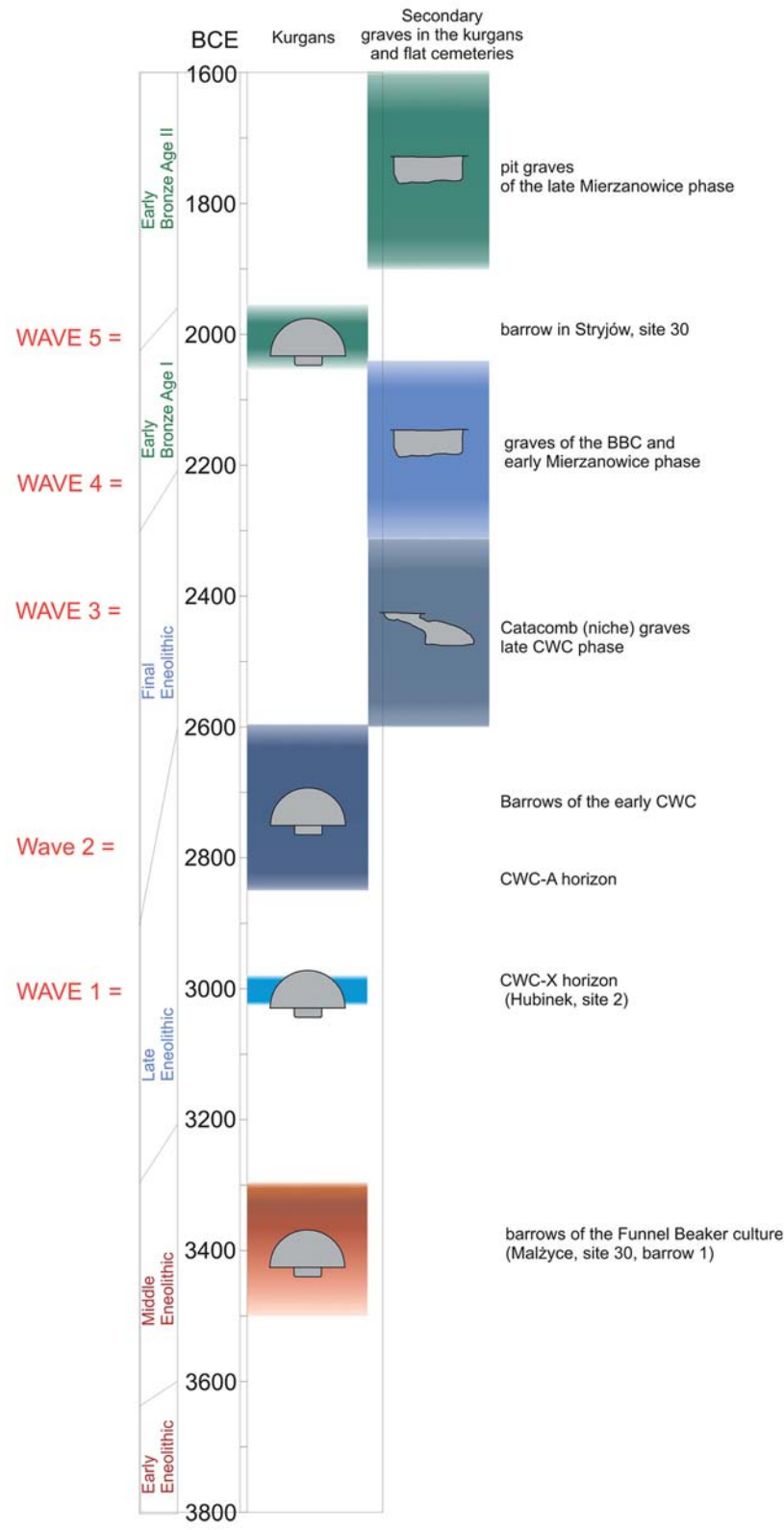


Fig. 15. General chronological scheme with datings of migration periods ("waves") specified in the text

Stryków described here. When looking for genetic inspiration leading to the resumption of barrow rituals in the Lesser Poland area, one should first consider the eastern direction, i.e. the circle of Babino culture combined with the Late Bronze Age in the North Pontic area. This association is credible due to the traces confirming the links with the Babino culture documented at the graves and settlements of the Strzyżów culture. In the perspective of the eastern expansion of the mounds, I. Sveshnikov draws attention to the interesting example of mounds I, II, IV and VI located in Zbrucz region (Podolia) in Ostapie (SVESHNIKOV 1990, 77), studied in the interwar period (BRYK 1935). These are, in his opinion, mounds associated with the expansion of the Babino steppe culture community (in his view still called the Mnogovalikovaya culture), as evidenced by ceramic finds and constructions of graves, finding analogies in the zone on the Dnieper River (SVESHNIKOV 1990, 77). Barrows associated with the Late Bronze Age in the forest-steppe zone differ from Central European Final Eneolithic burial mounds. On the other hand, the analogy for them are constructions of the Únětice culture, and above all the Tumulus culture (cf. e.g. GEDL 1975, Fig. XLIV). It should be expected that in south-eastern Poland (especially in its eastern part) the new impulse of barrow ideology could be particularly strong – due to the proximity of late Bronze groups of the forest-steppe zone expanding towards western Ukraine. Verification of previously excavated barrows from the eastern part of south-eastern Poland and western Ukraine makes it possible to include several of them in the time horizon of the burial mound in Stryków (e.g. barrow 1 from Łubcze 38 site or Nedeżów 25 site; BUDZISZEWSKI *et al.* 2016: 403).

## Conclusions

The above considerations indicate that regarding the 3<sup>rd</sup> millennium BC it is impossible to talk about one homogeneous migration trend, based on the Yamnaya-CWC relationship. Rather, some waves should be presented, resulting in long and diverse cultural processes (Fig. 15).

This nature of complications from south-eastern Poland is specific and does not fully correspond to the situation in any other region of Central Europe. Its specificity was determined by natural conditions, creating a natural corridor for the eastern European steppe communities – through the areas of Podolia and Volhynia towards the loess uplands of the upper Vistula basin. As a result, cultural relations with the eastern territories are present throughout the whole Eneolithic period, intensifying in its final period (the second half of the 4<sup>th</sup> millennium BC; e.g. KOŚKO 1991). This could also result in the emergence of steppe or forest-steppe kurgan communities relatively early. As an example, near the current Polish borders, the ritual of the Zhivotilovka-Volchansk group (second half of the 4<sup>th</sup> millennium BC) and settlement of the late Trypillia Gordinești group (DIACHENKO *et al.* 2019) are recorded.

Migrations of human groups from the borderland of the eastern European forest-steppe and forest – with Middle Dnieper and Katacombnyaya cultural traits – were a specific and significant factor around 2600–2400 BC. They had a decisive influence on the nature of the funeral rite from south-eastern Poland around the middle of the 3<sup>rd</sup> millennium BC. The continuation of this process was the emergence of the Bell Beaker and the early Mierzanowice societies at the end of the Final Eneolithic-beginning of the Early Bronze Age.

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# **Estonian Corded Ware culture (2800–2000 cal BC) – Defining a regional group in the eastern Baltic**

AIVAR KRIISKA – KERKKO NORDQVIST

## **Abstract**

*This article is the first comprehensive presentation of the Estonian Corded Ware culture in the eastern Baltic Sea area. An individual group of Estonian Corded Ware culture was identified several decades ago, and material research and fieldworks over the last 25 years have confirmed its existence. Judging mainly by the characteristic pottery and stone axes, this group prevailed in the present-day Estonia, and is also recognized in the northern and eastern parts of Latvia, south-eastern Finland, as well as in the Karelian Isthmus, Ingria and the Pskov Region in north-west Russia. The Estonian group is characterised by a relatively large number of settlements located in different natural environments, and a small number of burials, dominated by flat earth graves not covered by barrows. Material culture contains typical features of “normal” Corded Ware assemblages, but also has few elements that indicate possible contacts with neighbouring hunter-gatherers. The subsistence of the Estonian Corded Ware group was likely based on mixed economy, combining both productive livelihoods and hunting, gathering and fishing. Radiocarbon dates obtained for the Estonian Corded Ware group date its beginning from 2800 cal BC onwards, and, at least in some areas, it seems to last up to 2000 cal BC. Based on aDNA studies, Corded Ware material culture and burial custom was brought into this area by newcomers, originating somewhere in eastern or central Europe. The further destiny of the Estonian Corded Ware people is still partially unknown.*

**Key words:** *Corded Ware culture, Estonia, settlement sites, burials, material culture, chronology, subsistence*

## **Introduction**

Three main regional Corded Ware groups have been traditionally distinguished on the eastern shore of the Baltic Sea: 1) the Rzucewo culture (also called the Baltic Coastal and Haffküsten culture) in the coastal areas of Lithuania, the Kaliningrad Region of Russia and Poland, 2) the Baltic Corded Ware culture in the Lithuanian inland, Latvia and Estonia, and 3) the Finnish Corded Ware culture in Finland and on the Karelian Isthmus in Russia (EDGREN 1970; KRAYNOV 1987; KULAKOV – TIMOFEEV 1992; RIMANTIENE 1997; LOZE 2000; GRINEVIČIŪTĖ 2000; GIRININKAS 2002; GRASIS 2007). In addition, an individual group of Estonian Corded Ware culture has been separated. The main features of this group were described by Lembit JAANITS (*et al.* 1982, 102–117), and its existence has been recognized by other researchers as well (RIMANTIENE 1984, 35; HUURRE 1979, Fig. IX). Recent fieldworks and the scrutiny of previously collected archaeological materials, indeed, confirm the validity of this proposition.

We have repeatedly discussed different aspects of the Estonian Corded Ware culture on various occasions (KRIISKA 2000; KRIISKA – NORDQVIST 2007; 2010; KRIISKA *et al.* 2015a; 2015b; 2016; 2019a; NORDQVIST 2016; GERASIMOV *et al.* 2019), including a summarising overview in Russian (KRIISKA –

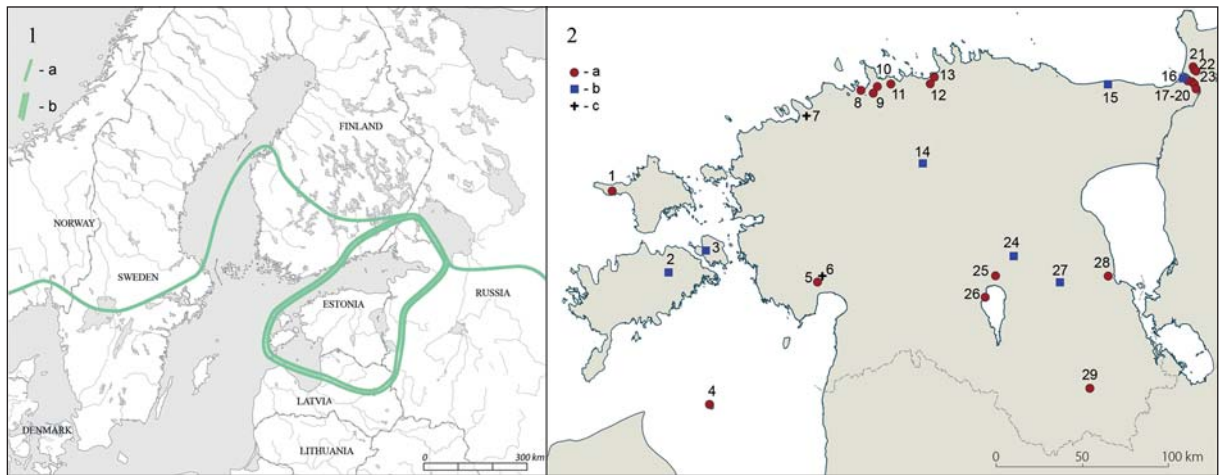


Fig. 1. 1. Northern border of the Corded Ware cultures (a) and the Estonian Corded Ware culture (b).

2. Estonian and Ingrian settlement (a) and burial (b) sites and stray find locations (c) mentioned in the text:

1. Kõpu IA, 2. Tika, 3. Külasepa, 4. Ruhnu Valgi, 5. Lemmetsa I, 6. Tani, 7. Langa, 8. Tallinn Vabaduse väljak, 9. Soodevahe, 10. Iru, 11. Rebala, 12. Ilumäe II, 13. Ilumäe IV, 14. Ardu, 15. Sope A and B, 16–17. Narva-Jõesuu IIB, 18. Riigiküla XIV, 19. Vasa, 20. Narva Joaorg, 21. Väike-Ropsu I, 22. Rosson I, 23. Rosson 9, 24. Kunila, 25. Siimusaare, 26. Valma, 27. Karlova, 28. Akali, 29. Tamula I. Maps by Aivar Kriiska

NORDQVIST – GERASIMOV 2017). However, this article is the first comprehensive presentation of the Estonian Corded Ware group in English (see also a parallel paper in Russian, KRIISKA – NORDQVIST 2021). In the following, we provide an up-to-date description of its settlements, burials and other material culture, chronology, subsistence and discuss current views on its emergence.

The main territory of the Estonian group – as the name implies – is the present-day Estonia, but it also extends to the northern and eastern parts of Latvia, south-eastern Finland, as well as to the Karelian Isthmus, Ingria and the Pskov Region in north-west Russia (MAZURKEVITŠ 2009, 36–37; NORDQVIST 2016; GERASIMOV *et al.* 2019) (Fig. 1). This presentation is based solely on Estonian material, as it is most comprehensively analysed – data from other areas are still being collected and studied.

## Research history

Research on the Corded Ware began in Estonia during the second half of the 19<sup>th</sup> century, but was for decades characterised by antiquarian collecting of stray finds (GREWINGK 1871; BOLZ 1914). In the early years of the 20<sup>th</sup> century, the first accidental finds and human remains from burial sites made it to the hands of researchers (HAUSMANN 1904; 1912; WEINBERG 1904), and the first general presentations were compiled shortly afterwards (EBERT 1913; TALLGREN 1922). The first larger studies commenced in the 1920s and 1930s, when two burial sites, Sope and Ardu, were excavated and published (AUL 1935; INDREKO 1935; 1937).

Excavations at settlement sites started extensively in the 1950s (JAANITS 1955; 1966; YANITS 1959a; 1959b; GURINA 1967), and this research, which continued in the following decade, formed the basis on which the general image of Estonian Corded Ware group was grounded. Jaanits divided pottery into two stages, Early and Late Corded Ware, and assigned especially the latter with numerous local features, emphasising that this unique ceramic group appears primarily in Estonia (YANITS 1959b, 151–166). Estonian types were similarly recognized in battle axes (ÄYRÄPÄÄ 1952; JAANITS 1973). Consequently,

Jaanimägi separated the Estonian group of Corded Ware culture, which, in his opinion, extended also to northern Latvia, but differed otherwise from neighbouring areas and Corded Ware groups (JAANITS *et al.* 1982, 102–117).

Over the past 25 years, research on Estonian Corded Ware culture has intensified again after a recession of several decades (1970s–early 1990s). The number of known settlement sites has multiplied and excavations have been carried out at 13 sites in Estonia (e.g. OTS – ALLMÄE – MALDRE 2003; KADAKAS *et al.* 2010; KRIISKA – NORDQVIST 2012; PAAVEL *et al.* 2016; BERNOTAS – RANDOJA – TVAURI 2017). One of the focal areas of new research is the Narva-Luga micro-region on the Estonian-Russian border by the Gulf of Finland (numbers 16–23 in *Fig. 1*). Fieldwork has been conducted there since the mid-1990s, and annually since 2005 on both sides of the border. As a result, over 20 new Corded Ware settlements and one burial site have been discovered (KRIISKA 2000; GERASIMOV – KRIISKA – LISITSYN 2012; GERASIMOV – KRIISKA – KHOLKINA 2013; KRIISKA *et al.* 2016), and many of them have been (test-)excavated further (KRIISKA 2000; KRIISKA – NORDQVIST 2007; 2010; KRIISKA *et al.* 2015a; 2015b; 2019a; GERASIMOV *et al.* 2019). The Narva-Luga area is currently the best-studied micro-region in north-eastern Europe in terms of Corded Ware and can be used as an example in pursuing a more detailed picture of the Corded Ware culture in the whole research area.

In addition to fieldwork, recent research includes compilations and comparative analyses of find materials (KRIISKA 2000; NORDQVIST 2016), geochemical material analytics (HOLMQVIST *et al.* 2018), palaeogeographic and hydrological reconstructions (ROSENTAU *et al.* 2013; RYABCHUK *et al.* 2019), osteological analyses (LÕUGAS – KRIISKA – MALDRE 2007), preliminary studies of macrofossils, phytoliths and starch granules, and lipid biomarker analyses of pottery (unpublished). Some of the inhumed individuals were subjected to stable isotope and aDNA analyses (ALLENTOF *et al.* 2015; RASMUSSEN *et al.* 2015; ANDRADES VALTUEÑA *et al.* 2017; SAAG *et al.* 2017; MITTNIK *et al.* 2018), as well as to archaeoethnological and anthropological research (VARUL *et al.* 2019; VASILEV *et al.* 2019). Studies have also expanded the body of radiocarbon dates available for the Estonian Corded Ware group (KRIISKA *et al.* 2007; 2016; NORDQVIST 2016), and, most importantly, clarified the existence of a specific Estonian group.

## Material culture

### Settlements and structures

The number of settlement sites in relation to known burials is large, as elsewhere in the eastern Baltic area (NORDQVIST – HÄKÄLÄ 2014, 8; PILIČIAUSKAS 2018, 24). About 70 settlements are known within the borders of modern Estonia, in addition to a dozen or more sites with materials (in particular, pottery) that can be associated with the Estonian Corded Ware group discovered in Latvia, Russia and Finland (*Fig. 1*). The vast majority of these sites were found in surveys, accidentally during archaeological digs focused on other periods, or in connection with everyday land use (*Fig. 3*). Consequently, the settlements remain poorly studied and comprehensive data on their properties rarely exist. Most sites designated as “settlements” are, actually, locations with Corded Ware pottery that cannot be unequivocally associated with burials (KRIISKA 2000, 70; see also NORDQVIST – HÄKÄLÄ 2014, 6).

Previous remarks acknowledged, Corded Ware culture settlements have been described as small, with weak cultural layers and few finds (JAANITS 1966, 61–63; KRIISKA 2000, 70). Due to mixed contexts, find assemblages characteristic to Corded Ware are not well defined either. In this regard, recent discoveries of single-component (i.e. pure Corded Ware) sites in the Narva-Luga region and northern Estonia



are important. They show that although there are numerous small sites (less than 100 m<sup>2</sup>), extensive locations exceeding half a hectare in area also exist (KRIISKA 2000; KRIISKA – NORDQVIST 2007; KRIISKA *et al.* 2015a; 2015b; PAAVEL *et al.* 2016; GERASIMOV *et al.* 2019). The idea of scarce assemblages is also not always true, even if Corded Ware sites, as a rule, contain fewer finds than many of the preceding (Comb Ware) sites in the area. Nevertheless, relatively small sites and scarce finds have induced the idea that Corded Ware settlements were left behind by small, family-sized settlement units (LANG 1996, 444; KRIISKA 2000, 74). On the other hand, large sites, like Riigiküla XIV, Rosson 9 and Narva-Jõesuu IIB, contain several activity areas or overlapping cultural strata, and indicate contemporary, continuous or recurrent use phases at these locations.

Structures – most commonly fireplaces and pits – are rarely encountered, and at multi-period, mixed or weakly stratified sites it is not always clear to which temporal context they belong. Almost no remains of dwellings have been recognized. In general, dwellings are considered to be light in structure and temporary in character (JAANITS *et al.* 1982, 106). One of the few exceptions is the Valma site in central Estonia, where four paired fireplaces located at a distance of 4–5 m from each other were interpreted as two parallel, oblong dwellings (JAANITS *et al.* 1982, 105–106). Argumentation in support of this claim, however, is rather weak. New evidence was again revealed in the Narva-Luga area, where two semi-subterranean buildings were discovered at the Narva-Jõesuu IIB site (KRIISKA *et al.* 2015a, 42; 2015b, 196).

The larger of the Narva-Jõesuu buildings is only partially excavated. It is rectangular in shape, with at least 3–4 m long walls (part of the structure is destroyed by World War II trenches) and a depth of



*Fig. 2. Part of the smaller building of Narva-Jõesuu IIB during fieldwork in 2016; the outline of the structure (not yet excavated to floor level) is emphasised. Photo by Aivar Kriiska*

ca. 70–80 cm from the modern ground surface. Perpendicular thin lines of charcoal-rich soil suggest that the building had some sort of wooden support, at least in the only studied undamaged corner. Smaller, fully excavated structure is ca. 2×4 m in size, and also rectangular (*Fig. 2*). The floor was met 1.3 m below the present-day surface, and even if the building was covered by later Corded Ware cultural layers (usually Corded Ware cultural layers are max. 20–30 cm thick), the parameters indicate that it served as a storage or had another function. On the floor level, the structure is largely delimited by clear stripes rich in charcoal/humus (the remains of a wooden construction), but partially very round corners and the depth of the pit preclude the presence of an actual timber frame with notched corners.

The buildings of Narva-Jõesuu are thus far fairly unique in the eastern Baltic Sea area. Two “residential pits” (Sw. *bostadsgrop*), excavated in the early 20<sup>th</sup> century at the Malm site in southern Finland (EDGREN 1970, 40, 70–71), may represent similar structures, but due to poor original documentation further comparison is impossible. The remains of possible, but only slightly deepened buildings were recently studied at Alksnynė, on the Curonian Spit in Lithuania (PILIČIAUSKAS 2018, 183), and in Espoo, southern Finland (T. Mökkönen, personal communication, 24 March 2020). Semi-subterranean, although much shallower buildings with post- and wattle-and-daub structures are known in the context of the partially older, partially coeval Rzucewo culture (ZAL’TSMAN 2010, 30–41; RIMANTIENĖ 1989, 29; see also LARSSON 2009 for Swedish Corded Ware material). Timber-framed structures are recorded among the eastern Corded Ware group of Balanovo in central Russia (BADER – KHALIKOV 1987, 78). Log-based semi-subterranean dwellings were commonly used by hunter-gatherers of north-eastern Europe during the previous millennium (MÖKKÖNEN 2011), although the few remains of pithouses found in Estonia were rather based on post construction (KHRUSTALEVA *et al.* 2020).

The deviant placement of Corded Ware culture sites in comparison with the location of previous hunter-gatherer sites has long been “common knowledge”. The main difference is that the sites are no longer so rigidly shore-bound, but are usually located at a distance of at least one hundred meters or more from the sea or lake shore. However, this is partly a generalisation, since Corded Ware sites are known in the immediate vicinity of lakes, in addition to which settlements are present on the islands of the Baltic Sea, although not directly on the sea coast (KRIISKA – TVAURI 2002, 79; see also ASPLUND 2008, 61). Diversity is also illustrated by the Narva-Luga region: numerous sites are found on the banks of large rivers or smaller streams, many sites are located near small ponds, and there are also sites that are further away from the ancient or present-day waterbodies. However, some of the sites originally located on the shores of an ancient sea or lake (e.g. Tallinn Vabaduse väljak, Siimusaare, Ruhnu Valgi, Kõpu IA), are



*Fig. 3. Excavations at the settlement sites of Soodevahe (1) in 2015 and Vasa (2) in 2018. Both sites also contain Iron Age finds and were investigated in connection with large land use projects, but illustrate different environmental settings: limestone rendzina (bedrock) and aquatic sediment deposits. Photos by Andres Kimber and Kerkko Nordqvist*



currently found inland due to post-glacial land uplift and lowering water levels. Most settlements are located on sandy soils. In addition, a group of sites in north Estonia (such as Soodevahe, Rebala, Ilumäe II and IV) is situated on limestone rendzina, an environment typical of Metal Age farmers rather than Stone Age hunter-gatherers (PAAVEL *et al.* 2016, 56) (*Fig. 3.1*).

### Burial practices and grave goods

Corded Ware culture graves are known from 21 sites, with the remains of more than 30 individuals (*Fig. 1*). However, only nine skeletons have survived up to the present moment, and just a few of these sites were actually unearthed as a result of excavations by professional archaeologists (Sope B, Ardu, Kunila, Narva-Jõesuu IIB) (*Fig. 4*). Furthermore, most studies were already carried out in the early and middle 20<sup>th</sup> century, with the only exception being Narva-Jõesuu IIB. Unfortunately, the (supposedly) three skeletons in the two graves found here were not preserved (KRIISKA *et al.* 2015a, 44; 2015b, 199). Thus, the material is scarce, and in many cases only preliminary conclusions can be drawn; in this respect, Estonian mortuary materials resemble materials from neighbouring territories (LOZE 2006; PILIČIAUSKAS 2018, 199; AHOLA – HEYD 2020; MACĀNE – NORDQVIST 2021).

Burials are usually located nearby settlements – occasionally also inside settlements – and occur individually or in groups of only a few graves (INDREKO 1935; YANITS 1952; 1983; KRIISKA – TVAURI 2002, 81). The only larger burial ground is Sope B in north-eastern Estonia with nine or ten burials (INDREKO 1935, 14; VARUL *et al.* 2019), accompanied by Sope A, just 100 m away, and with four burials. Graves are normally simple pits, less than 1.5 m deep and with varying orientations. Flat earth graves are not covered by barrows, and internal structures (stone settings and fireplaces) are rarely reported. The burials are single, sometimes double inhumations. Burial practices seem to be gender-specific, but there is still too little well-documented evidence. The deceased are in a flexed, rarely in supine position, women, possibly on their right, and men on the left side (*Fig. 4.2*). It has been proposed that some bodies would be wrapped or bound, and a recent re-evaluation of one individual from Sope B (VARUL *et al.* 2019) showed that mortuary practices may have been complex, including secondary treatment of human remains (*Fig. 4.1*).



*Fig. 4. Burial I, excavated in 1926 (1), and burial II, excavated in 1933 (2), at the Sope B burial ground.  
Photos by Harri Moora and Richard Indreko*

The grave goods are fairly standardised, although their combinations vary. Assemblages include battle axes, work axes/adzes of flint and crystalline rock, flint (blade) knives, bone and antler awls, adzes and other artefacts, and whetstones (KRIISKA – TVAURI 2002, 81). In individual cases, amber and shell ornaments have been discovered (KRIISKA *et al.* 2015a, 44). Animal bones, both processed and unworked, possibly deriving from food offerings or other rituals, have been identified as well (LÕUGAS – KRIISKA – MALDRE 2007, Table 2; VARUL *et al.* 2019, 466).

### Pottery: beakers and pots

Pottery has dominated the study of Corded Ware culture, in part because other classes of artefacts (excluding battle axes) are inadequately recorded. Ceramic vessels are present in two basic forms: beakers and domestic jars or pots (Fig. 5). Beakers are customarily encountered in graves, but appear also at settlement sites, while domestic pottery is usually found only at the latter. Amphorae are not known in the Estonian Corded Ware contexts, and only one shallow bowl has been discovered so far in a burial at Narva-Jõesuu IIB (KRIISKA *et al.* 2015a, 44). Other clay objects are limited to some obscure fragments of burnt clay (KRIISKA 2000, 69, Fig. 7).

In the eastern Baltic Sea area, research traditionally placed a strong emphasis on beakers (and amphorae), while domestic pottery was rarely discussed and even poorly recognized. Estonian Corded Ware pottery is relatively well researched, but since the studies focus on individual settlement sites and specific small regions, a detailed comprehensive overview is not available at this point (see YANITS 1959a, 45–47; 1959b, 151–167; KRIISKA 1999, 180–181; 2000, 64–70; PAAVEL *et al.* 2016, 51–53, KHOLKINA 2017; KRIISKA *et al.* 2019a, 42–44). Beakers dominate burial contexts, but recent studies show that the

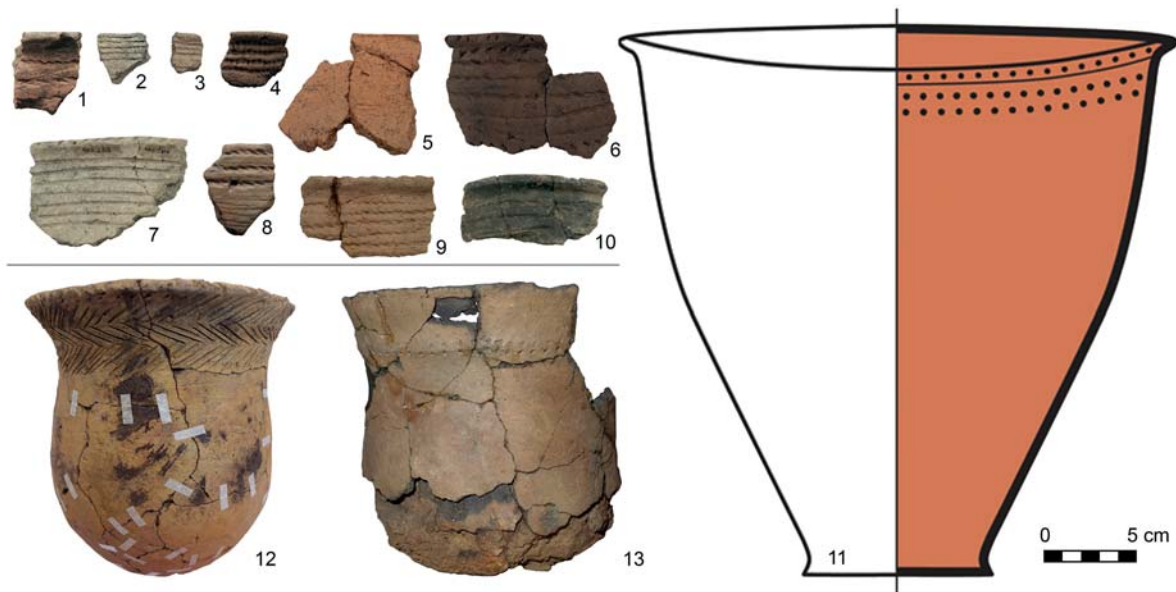


Fig. 5. Fragments of Estonian type Corded Ware pots from the Narva-Jõesuu IIB (1), Lemmetsa I (2–3), Kõpu IA (4), Riigiküla XIV (5–6, 9), Akali (7, 10) and Tallinn Vabaduse väljak (8) settlement sites, reconstruction of a household pottery vessel from the Narva Joaorg site (11) and beakers from the Narva-Jõesuu IIB (12) and Sope (13) burial sites. (TÜ 2190: 29, PāMu 14642/A2515: 3a, PāMu 14642/A2515: 3b, AI 6007: 1791, NLM 2181: 672, NLM 2181: 1126/1398, AI 4013: 2616, AI 6917: 376, NLM 2181: 157, AI 4013: 1029, TÜ 2190, AI 3175: 2). Photos by Aivar Kriiska and Peeter Kraas, drawing by Aivar Kriiska and Kristel Külljastinen



situation is quite the opposite at settlements. Domestic pottery prevails here, and, for example, beakers account for just 4.8% of all ceramic fragments at Soodevahe (PAAVEL *et al.* 2016, 52) and 4% at the Vasa site (KRIISKA *et al.* 2019a, 42; see also KRIISKA *et al.* 2015a, 43; KHOLKINA 2017, 156).

Pottery is often tempered with mineral admixtures: sand, grog and rock debris. However, a specific feature of the Estonian group is the use of organic tempers, and the distinctive prints left by organic materials (fibres) on the vessel surfaces can even be regarded as one of the identifying attributes of the Estonian Corded Ware. Organic admixtures, like plants or bird down, are commonly used in domestic ware and are occasionally present in beakers too (KRIISKA 2000, 64; KHOLKINA 2017, 150). For example, at Riigiküla XIV, Vasa and Soodevahe (KRIISKA 2000, 64; PAAVEL *et al.* 2016, 52; KRIISKA *et al.* 2019a, 42), 92–96% of all fragments have organic temper (component). The percentage of grog, often occurring together with organic temper, ranges from 3% (Soodevahe) to 57% (Vasa; these figures include only grog, which can be identified with naked eye or a magnifying glass). Organic material or grog can sometimes also be combined with rock debris (5% in Soodevahe, 2.5% in Vasa).

Beakers are usually manufactured by coiling and present N-type conjunctions (KRIISKA *et al.* 2015a, 43; PAAVEL *et al.* 2016, 52). They have flat or slightly convex bottoms, (weakly) S-profiled globular shape, as well as short necks and wide mouths with straight or somewhat outwards protruding rims (*Fig. 5.12–13*). Knobs or lugs are known only on individual vessels found at the Tamula I settlement site (JAANITS *et al.* 1982, 109). Decoration is horizontally aligned, restricted to the upper part of the vessel (rim, neck) and consists of cord impressions, incised lines (sometimes forming a fishbone pattern or zig-zags), rows of shallow pits, notches and other impressions (YANITS 1959a, 46; 1983, *Fig. 15*; KRIISKA 1995, 95). Some beakers are almost unornamented, like a vessel with just a row of notches on the outer rim edge, found in a burial at Narva-Jõesuu IIB. Vessels are thin (wall usually 4–6 mm) and well-fired with burnished, smoothed or weakly striated surfaces.

Domestic pottery is occasionally finely finished as well, but usually its surfaces are coarsely smoothed or striated, and textile-like impressions may be sometimes visible (KRIISKA 2000, 66; KRIISKA *et al.* 2019a). Jars were of different sizes, usually thicker (walls normally 8–10 mm) than beakers and with mouth diameter of 10 to 40 cm; the mouth diameter of beakers generally does not exceed 15 cm. Pots are formed by coiling (N-type conjunctions) (OTS – ALLMÄE – MALDRE 2003, 136; KRIISKA 2000, 65), and, at least in the Narva-Luga region, patching technique is used as well (KHOLKINA 2017, 151). Vessels are weakly profiled and with straight or moderately outwards-turned rims; flat bottoms are usually smaller in diameter than the mouth (*Fig. 5.11*). Decoration is present on top or below the rim or on the neck and consists of cord impressions, simple rows of various impressions (notches, pits, etc.), horizontal grooves and incised lines (sometimes also in fishbone pattern), although undecorated vessels are also known. Pots with straight mouldings or wavy cordons around the neck are described only in a few cases in Estonia and Ingria (YANITS 1959a, *Fig. VII: 9*; KHOLKINA 2017, 153).

### Stone axes and adzes

Currently, ca. 350 battle axes are known in the research area. Most of them are stray finds, but individual specimens (or their fragments) are found at settlements (e.g. GERASIMOV *et al.* 2019, 388) and around ten axes come from burials (e.g. YANITS 1959a, 51; JAANITS *et al.* 1982, 107; KRIISKA *et al.* 2015a, 44) – or, in rare cases, were identified as offerings (JOHANSON 2006, 113). Typologically, battle axes are divided into two main groups. The continental or A-type (in Estonian archaeological literature also Kulasema) is connected to the initial spread of the Corded Ware culture in the area, whereas the Karlova axe is seen to represent the local development (ÄYRÄPÄÄ 1952; JAANITS 1973) (*Fig. 6.1–4*).



Fig. 6. Continental battle axe from the Külasepa burial site (1), Karlova type axes from the Ardu burial site (2), the Saaremaa Island (3) and the Kunila burial site (4), sharp-butted axe from Tani (5) and Fatyanovo axe from Langa (6). Axes 3, 5, 6 are stray finds. (AI 1228: 1, AI 3499: 1, PM 2301: 1, AI 3989: 6, PāMu 1 A 502, AM 60).

Photos by Aivar Kriiska and Peeter Kraas

The Karlova type is characterised by an angular cross-section and sharply faceted polished sides, as well as an often-pronounced collar around the shaft-hole and a thickening, knob-shaped poll (JAANITS *et al.* 1982, 111). The blade is strongly curving backwards. The axes were made in different sizes, and sometimes the detail of finishing varies. Estonian battle axes are very often manufactured from uraltite porphyrite (other rock types, such as olivine diabase, are used from time to time) and most probably represent local production (KRIISKA – TŲAURI 2002, 83). Some Karlova axes are also known in Latvia, southern Finland and Russia, and at least one example has been reported from Lithuania (JAANITS 1973, 75–76; LOZE 2000, Fig. 1; NORDQVIST – HÄKÄLÄ 2014, 14).

The so-called sharp-butted axes, characterised by generally rhombic shape and cross-section, are closely connected with Estonian Corded Ware (Fig. 6.5). This axe type is thought to have developed from the Karlova axe (JAANITS *et al.* 1982, 113), but to also carry Finnish influence (ÄYRÄPÄÄ 1952, 89; JAANITS 1959b, 346). Consequently, even if tens of sharp-butted axes are known in Estonia, most finds of this type were made in Finland (NORDQVIST 2016, 60). In addition, individual specimens representing Finnish, Swedish and Fatyanovo battle axes are discovered in Estonia, and also axes simultaneously combining the characteristics of several different types can be distinguished (JAANITS 1973, 62, 64, 71; JAANITS *et al.* 1982, Fig. 82) (Fig. 6.6).

Four-sided, even-bladed work axes and adzes are found in much smaller numbers than shaft-hole axes. These are mostly stray finds, but they have also been found in burial sites. Work axes and adzes are made of crystalline rocks or flint (Fig. 7.8–9), the latter representing imports from more southern Baltic regions (JAANITS *et al.* 1982, 104, 107). Shouldered (or tanged) axes are extremely rare in Estonia, but judging by analogous finds from neighbouring areas, can also be related to the Corded Ware culture.

### Other artefacts

Knapped lithic assemblages are modest in quantity, but contain both quartz and flint and represent at least bipolar knapping technique (KRIISKA – NORDQVIST 2007, 34; PAAVEL *et al.* 2016, 53). Lithic artefacts include small tools and implements such as scrapers and awls. In addition, large flint blade knives are found in burials (more rarely at settlements; KRIISKA – TVAURI 2002, 81), and a few dozen heart- or triangle-shaped flint arrowheads are known in Estonia (KRIISKA – SALUÄÄR 2000, 26) (Fig. 7.1–7).



Fig. 7. Flint knives (1, 2, 7), arrowheads (3–6) and adzes (8–9) found from the Ardu burial site (1, 7, 9), the Kunila burial site (2), the Tamula I settlement site (4–6) and the Narva-Jõesuu IIB burial site (8). (AI 3499: 12, AI 3989: 12, AI 3252, AI 3960: 91, AI 3680, AI 4118: 2757; AI 2745: 3; TÛ 2190, AI 3499: 10).

Photos by Aivar Kriiska and Peeter Kraas

Excavations and surface collecting of large open areas in the Narva-Luga and Tallinn micro-regions show that the paucity of lithics is a real phenomenon, and not just the result of insufficient investigations. This may reflect the preference of people for tools made of organic materials. Unfortunately, such artefacts are rarely encountered at settlements, and even then they are usually in a poor state of preservation. Burial finds (Ardu, Kunila, Sope B and Tika) show that the assortment of bone and antler tools and artefacts was diverse and included awls, knives, chisels, fish spears, and so forth (Fig. 8.1–7). Both domesticated and wild species are present: most of the awls are made of sheep bone, but bones and teeth of wild boar, elk and beaver are also used (LÕUGAS – KRIISKA – MALDRE 2007, Table 2; VARUL *et al.* 2019, 467–468).

Whetstones are encountered relatively often in both settlements and burials (KRIISKA *et al.* 2015a, 44). Amber has been discovered only twice in a funerary context (KRIISKA *et al.* 2015a, 44), shell ornament – just once (YANITS 1952, 53). To date, no metal finds have been associated with Corded Ware in the research area.

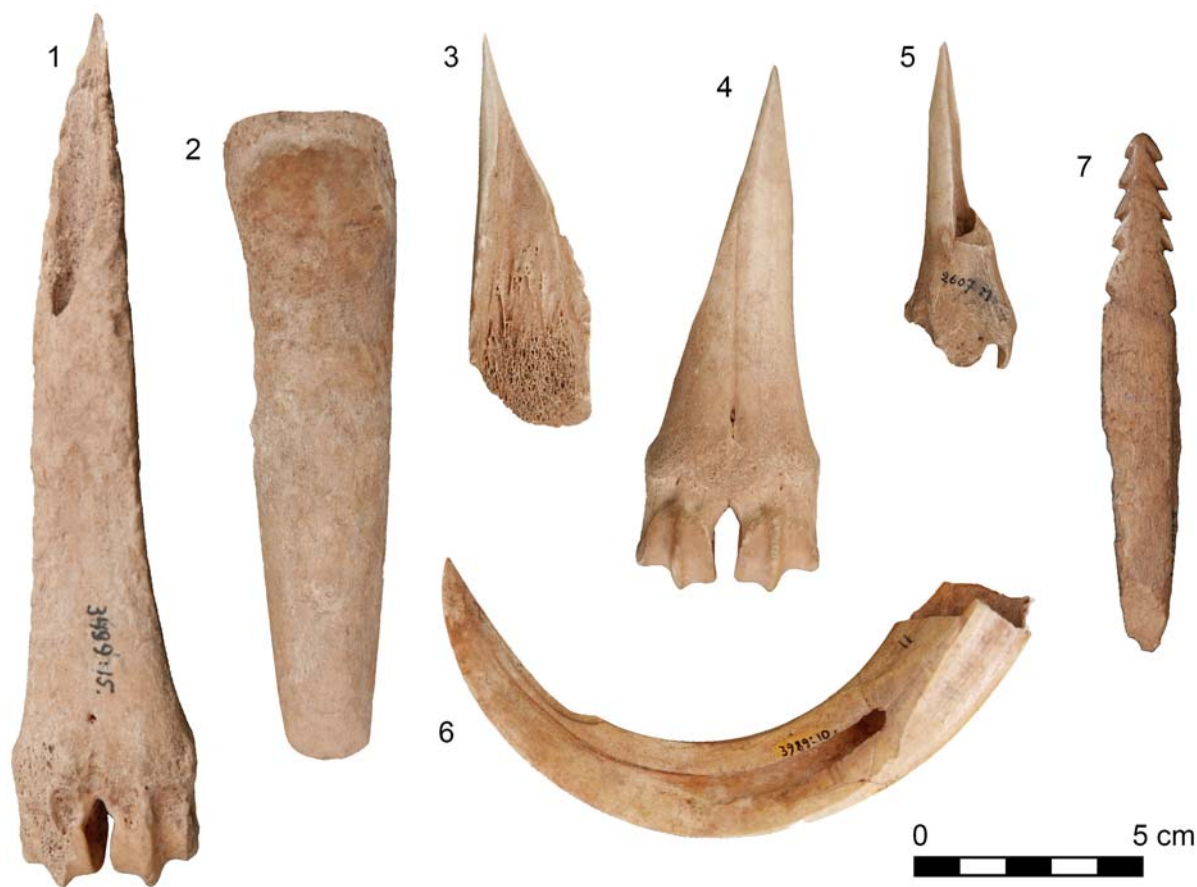


Fig. 8. Awls of sheep/goat bone (1, 3, 4, 5), wild boar tusk knife (6), chisel of ungulate bone (2) and fish spear of elk (?) bone (7) found from the Ardu (1, 2), Sope (3–5), Kunila (6) and Tika (7) burial sites. (AI 4399: 15, AI 3499: 11, AI 2671: 44, AI 3175: 1, AI 2607: 1, AI 3989: 10, AI 3663: 1). Photos by Aivar Kriiska

## Chronology

Available radiocarbon data is small, and just 18 dates can be connected with Estonian Corded Ware (Table 1). Based on this geographically unbalanced material, Corded Ware appears in the research area apparently swiftly around and after 2800 cal BC. This timing is consistent with the results recently presented in neighbouring areas (PILIČIAUSKAS 2018; PESONEN – LARSSON – HOLMQVIST 2019) – the previously proposed earlier beginning (ca. 3000 cal BC) in Estonia was based on the equally too early dates given for Corded Ware in these countries (KRIISKA – TĀVURI 2002, 76).

The end of the Corded Ware culture is customarily placed – like in much of Europe – to about 2300 cal BC. Nevertheless, especially dates from the eastern Gulf of Finland area indicate that, at least there, Corded Ware could last up to ca. 2000 cal BC (KRIISKA *et al.* 2015a, 44; NORDQVIST 2016, 61). This being said, chronology requires much more research. Temporal differences suggested for pottery with different tempers or battle axe types are so far based purely on typological reasoning, and there are not enough dates to support (or refute) these statements (see NORDQVIST 2016, 60–61 for discussion).



Table 1. Radiocarbon dates obtained for Estonian Corded Ware and related contexts (settlement and burial sites) from Estonia, as well as north-west Russia (Ingria, the Karelian Isthmus; no. 10, 16–18) and Finland (no 2, 12–13). All datings are calibrated with the OxCal v4.3.2 using the IntCal13 atmospheric curve (BRONK RAMSEY 2009; REIMER *et al.* 2013), and given in 95.4% probability

No	Site	Material	Radiocarbon age (BP)	Calibrated age (cal BC)	Lab-index	Reference
1	Narva-Jõesuu IIB	burnt animal bone	4215±35	2904–2678	Poz-58913	KRIISKA <i>et al.</i> 2016, Table 1
2	Mattilan VPK	charred crust	4136±29	2873–2620	Hela-3428	HOLMQVIST <i>et al.</i> 2018, Table 1
3	Ruhnu Valgi	charred crust	4130±40	2872–2581	Poz-30595	KONSA – OTS 2009, 216
4	Ardu, burial II	human bone	4110±40	2871–2505	Poz-10824	KRIISKA <i>et al.</i> 2007, Table 1
5	Sope B, burial II	human bone	4090±35	2864–2495	Poz-10827	KRIISKA <i>et al.</i> 2007, Table 1
6	Tika	human bone	4035±35	2834–2471	Poz-10803	KRIISKA <i>et al.</i> 2007, Table 1
7	Riigiküla XIV	charcoal	3970±100	2865–2200	Ta-2680	KRIISKA 2000, 74
8	Sope B, burial I	human bone	3969±32	2575–2349	UBA-29064	RASMUSSEN <i>et al.</i> 2015, Table S1
9	Kunila, burial II	human bone	3960±40	2576–2340	Poz-10825	KRIISKA <i>et al.</i> 2007, Table 1
10	Kunnianiemi	burnt animal bone	3955±35	2572–2342	Hela-1844	SEITSONEN <i>et al.</i> 2012, Table 2
11	Narva-Jõesuu IIA	charred crust	3931±35	2562–2299	Hela-2740	ROSENTAU <i>et al.</i> 2013, Table 2
12	Mäntymäki	charred crust	3897±29	2468–2297	Hela-3425	HOLMQVIST <i>et al.</i> 2018, Table 1
13	Meskäärty	charred crust	3820±45	2458–2141	Hela-1614	MÖKKÖNEN 2008, Table 1
14	Karlova	human bone	3805±35	2435–2136	Poz-15499	KRIISKA <i>et al.</i> 2007, Table 1
15	Narva-Jõesuu IIB	burnt animal bone	3755±30	2284–2041	Poz-58914	KRIISKA <i>et al.</i> 2016, Table 1
16	Rosson 1	burnt animal bone	3725±40	2279–1982	Hela-2744	ROSENTAU <i>et al.</i> 2013, Table 2
17	Gvardeyskoe 1	charred crust	3630±35	2131–1896	GrA-62069	NORDQVIST 2016, Table 2
18	Väike-Ropsu 1	burnt animal bone	3607±31	2111–1887	Hela-2516	ROSENTAU <i>et al.</i> 2013, Table 2

### Subsistence

The extensive spread of productive livelihoods, cultivation and animal husbandry, is traditionally connected with the appearance of Corded Ware culture in Estonia (e.g. JAANITS *et al.* 1982, 125). Even if the evidence of subsistence is partly slim, a mixed economy prevailed in the research area: besides productive livelihoods, subsistence was obtained through hunting, gathering and fishing.

Animal husbandry was part of the Corded Ware culture living. The presence of domestic animals is proven by osteological finds, especially burials containing bones of sheep/goat (*Ovis aries/Capra hircus*), pig (*Sus scrofa dom.*) and cattle (*Bos taurus*), as well as artefacts made of them (LÕUGAS – KRIISKA – MALDRE 2007, Table 2) (Fig. 8.1, 3–5). Data from the settlements is limited, partly due to mixed find contexts, partly because of poor preservation conditions, and osteological materials usually consist of only small burnt unidentified bone fragments. In this situation, the carbon and nitrogen isotopes of an individual buried in Sope B (RASMUSSEN *et al.* 2015, Table S1) may be illustrative. They

clearly differ from the corresponding values of earlier and contemporary hunter-gatherers of Estonia and are more compatible with the results measured for agricultural populations of the Late Bronze Age in the area (LANEMAN – LANG 2013, Table 1, 2; TÕRV 2016, Table 17). Stable isotopes indicate that the protein consumed came mainly from terrestrial sources.

The role of cultivation is less clear. The existence of barley is evidenced by a seed and a seed imprint on an (Estonian-type) Corded Ware sherd found at the Iru site in northern Estonia (VASSAR 1939, Fig. 54; LANG 1996, 168–169). Other macrofossil remains are not known, although very few analyses have been performed to date. Pollen analyses of bog and lake sediments from the Estonian inland and the Saaremaa Island show numerous occurrences of *Cerealia* pollen (*Hordeum* and *Triticum*, *Avena* possibly as a weed) dating from the Corded Ware period (see KRIISKA 2009, 165 Table 1, 168 and references therein). During the same time, there is an increase in herbaceous plants, especially species that prefer a large amount of sunlight and grow on meadows (*Chenopodiaceae*, *Melampyrum*, *Polygonum* L., *Rumex*, etc.) (e.g. VESKI 1998, Fig. 43; POSKA – SAARSE 2002, Fig. 8, 9). The amount of charcoal particles in the sediments is also elevated and, possibly, connected to man-made fires intended to clear out areas of forest and brushwood for arable land and pastures. However, as only rare continuous cereal pollen curves are documented from this period (VESKI – LANG 1996, 189), and as human impact on forests is very small in comparison to climatic factors (REITALU *et al.* 2013), the land area used for cultivation must have been small.

Changes in settlement patterns have also been presented as indirect evidence of productive livelihoods (KRIISKA – TVAURI 2002, 79). For example, the ruptured connection with the shore and the utilisation of limestone rendzinas are striking differences compared to the hunter-gatherer settlements. However, none of these changes provides conclusive arguments that alone would solve the question of the subsistence of Estonian Corded Ware culture.

The role of foraging is even more difficult to record. As mentioned above, some bones of wild species are found in graves, including elk (*Alces alces*), beaver (*Castor fiber*) and wild boar (*Sus scrofa*) (LÕUGAS – KRIISKA – MALDRE 2007, Table 2). Material from the settlement sites is even more scarce, as evidenced by the osteological assemblage excavated from Riigiküla XIV (17.5 m<sup>2</sup>), consisting of one burnt bird and five fish bones (*Esox lucius*, *Perca fluviatilis* and *Cyprinidae*) (KRIISKA 2000, 74). Specialised hunting equipment is basically unknown, except for fish spears of bone found in two burials (JAANITS *et al.* 1982, 107) (Fig. 8.7). The only definite evidence of gathering is the charred shells of hazelnuts (*Corylus*) found at several settlement sites (e.g. KRIISKA 2000, 74).

### Ancestors, contemporaries and descendants

The Estonian Corded Ware group emerged in an area inhabited by the late descendants of the Comb Ware cultures (EDGREN 1970, 62; LOZE 1996, 60; KRIISKA – TVAURI 2002, 76). As elsewhere in the eastern Baltic region and western Russia (see EDGREN 1970, 62; KRAYNOV 1987, 74–75; GIRININKAS 2002), the Corded Ware culture is generally thought to result from the immigration of new populations (see also NORDQVIST – HEYD 2020, 16–19). Views on the nature of these demographic movements, however, vary from a rapid, single-event colonisation to a prolonged process of multiple waves of both larger and smaller human groups (e.g. INDREKO 1962, 12; JAANITS *et al.* 1982, 102; KRIISKA – TVAURI 2002, 84). Cultural diffusion or large-scale adoption of new cultural traditions by indigenous populations, following the example of a small number of settlers, is rarely supported (LANG 1998, 97–99).

The different ancestries of these populations were recently confirmed by aDNA studies (Fig. 9). The analysed Estonian Corded Ware individuals are genetically more similar to other representatives

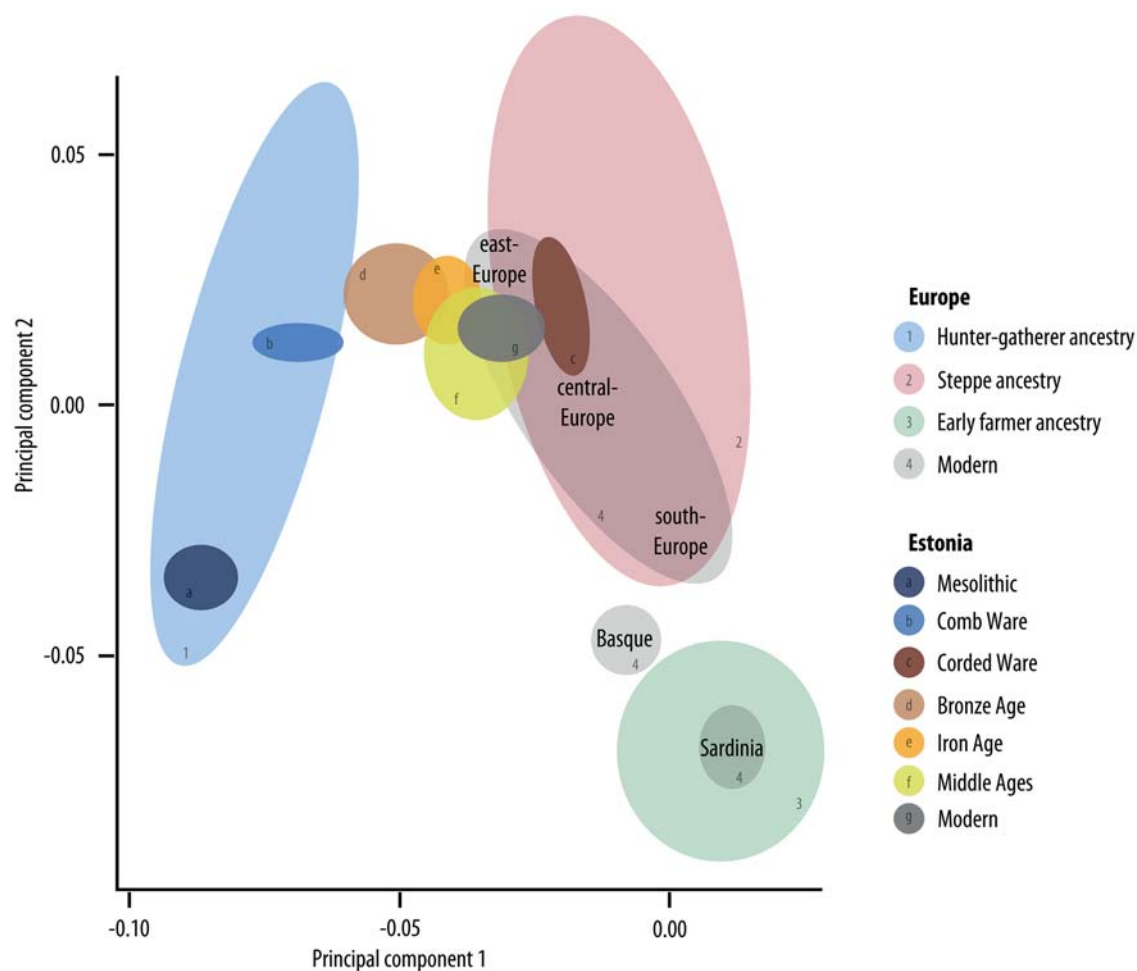


Fig. 9. Estonian genetic history based on current knowledge of aDNA. The principal component analysis (PCA) graph shows the genetic distances of various ancient populations in modern Estonia, projected onto the first two principal components defined on the basis of modern populations of Europe, the Caucasus and the Middle East. Modified from an illustration by L. Saag in KRIISKA *et al.* 2019b, Fig. 1

of the Corded Ware culture in Europe than to earlier and contemporary Stone Age hunter-gatherers of Estonia and Latvia (SAAG *et al.* 2017, Fig. 2; MITTNIK *et al.* 2018, Fig. 2). The data are still not enough to answer many questions of the population history, but as Estonian Corded Ware individuals carry a small component of (Anatolian) ancestry of Early Neolithic cultivators, unknown among the earlier inhabitants of Estonia and Latvia (mtDNA haplogroups H, J and T), newcomers must originate somewhere in eastern or central Europe where this ancestry has been established (JONES *et al.* 2017, Fig. 1; SAAG *et al.* 2017, Table 1; MITTNIK *et al.* 2018, Table 1; see also SAAG *et al.* 2021).

Details of the further development and differentiation of the Estonian Corded Ware group and its cultural tradition are unclear. A few features in pottery (use of organic temper in the moulding mass, some rim shapes and ornamentation motifs) are suggested to be loans from the Comb Ware traditions (JAANITS *et al.* 1982, 109; KRIISKA 1995, 106; KHOLKINA 2017, 154) (the possible hybrid features are not enough to crop Estonian pottery outside Corded Ware and to introduce a label “Riigiküla XIV type” based on a limited sample; (cf. PILIČIAUSKAS 2018: 151–154). Overall, however, the similarities between the cultural traditions are quite scarce. They seem to exist on the Estonian territory simultaneously

for centuries (based on a couple of radiocarbon datings, the Comb Ware tradition lasted until ca. 1800 cal BC) and retain differences in both material culture and lifestyle. Still, interaction also took place, as shown by the presence of mtDNA haplogroup U, characteristic to hunter-gatherers, in the genome of few Corded Ware culture individuals. Since all Corded Ware males analysed so far carry the same (incoming) Y-DNA haplogroup R1a (SAAG *et al.* 2017, Table 1; MITTNIK *et al.* 2018, Table 1), native women may have been particularly integrated into Corded Ware societies (see LANG 2019, 31).

Contacts between the different groups of Corded Ware culture seem to have been vigorous. Geochemical similarities in the composition of pottery matrices and grog tempers indicate lively connections over the Baltic Sea, between Estonia, Finland and Sweden (HOLMQVIST *et al.* 2018), further supported by finds of individual Estonian battle axes abroad and foreign types in Estonia (JAANITS 1973, Fig. 9; LOZE 2000, Fig. 1; NORDQVIST – HÄKÄLÄ 2014, Fig. 8). Interaction with the eastern Fatyanovo group was earlier recognized in some morphological features and some actual battle axes (ÄYRÄPÄÄ 1952, 95; JAANITS 1973, 74), and these connections are also supported by the recent discovery of eastern-like clay vessels (and a battle axe) from a burial in the Narva-Luga area (KRIISKA *et al.* 2015a, 44; 2015b, 199) (Fig. 5.12), as well as probable similarities in the pottery manufacturing technique (KHOLKINA 2017, 155). Southern networks are evident in general material culture and are emphasised by the import of flint (and amber).

Despite more than a century of research, many aspects of the Corded Ware culture still remain somewhat unclear, *inter alia*, the end of the culture and its relation to subsequent habitation in Estonia. Current data show that the Corded Ware culture ended (depending on the area) between ca. 2300–2000 cal BC. At the same time, only a very small number of settlements and graves are attributable to other groups from the end of the Stone Age and the beginning of the Bronze Age; the agreed boundary between these two periods is ca. 1800 cal BC (e.g. LANG 2007, 18–24; TÖRV – MEADOWS 2015). Comb Ware culture settlements may in some regions outlive Corded Ware ones by a few centuries, and in eastern Estonia, a new cultural phenomenon of Early Textile Ware develops as a result of eastern influence, possibly including a new population (JAANITS *et al.* 1982, 117–118, 125; LANG 2018, 126). In addition, some bronze artefacts, a few south-Scandinavian flint daggers and approximately 350 so-called “late stone axes” of different types that cannot be accurately dated appear in the material (e.g. JOHANSON 2006; LANG – KRIISKA 2007). The influence of Corded Ware culture can be recognized only in the stone axes, but before all materials belonging to this period are better analysed and understood, we cannot draw well-argued conclusions about the final phase and the possible transformation of Corded Ware culture and its carriers. The application of genetic and other analytical scientific methods will also be of great help in this task.

### Acknowledgements

Writing of this article was financially supported by the Estonian Research Council project PRG243, Arheograator Ltd. (AK) and the Helsinki University Humanities Program (KN). We would like to thank Irina Khrustaleva for preparing the illustrations and useful comments on the manuscript. We are also grateful to all the people who took part in our archaeological expeditions over the years. The objects presented in the illustrations of this article are from the collections of the Tartu University (TÜ), Tallinn University (AI), Pärnu Museum (PäMu), Narva Museum (NLM) Estonian History Museum (AM) and Paide Museum (PM).



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# On the earliest Corded Ware in Bohemia

MIROSLAV DOBEŠ – MONIKA PECINOVSKÁ – MICHAL ERNÉE

## Abstract

*The paper primarily addresses the beginnings of the Corded Ware culture (CW) in Bohemia (c. 2900/2800–2500/2400 BC). To gain an understanding of the local archaeological context, the introduction describes the basic find characteristics of the Bohemian CW and the history of research according to its relative and absolute chronology, assumed origin, subsistence, population size, types of mobility, etc., discussed by Bohemian scholars. The individual categories of typical finds are presented in detail, starting with artefacts of the so-called A-horizon (A-amphorae, A-beakers, A-battle axes), grave inventories containing bone belt clasps, to the aceramic graves of the Kalbsrieth type. This is supported by new grave finds, including the extraordinary grave assemblage from Obříství, and series of radiocarbon data.*

**Key words:** Early Corded Ware, Bohemia, A-horizon, A-Amphorae, A-Battle axes, Kalbsrieth

## 1. Introduction

This paper primarily addresses the finds and grave assemblages identified, during the more than 150 years of research dedicated to the Bohemian CW, as belonging to its initial phase – the so-called A-horizon (BUCHVALDEK 1957). In this study we present the archaeological data in the “old fashioned” and maybe “long-outdated”, but still broadly accepted and used, culture-historical way of “archaeological cultures” (see the last handbooks to Bohemian prehistory: JIRÁŇ *et al.* 2013; NEUSTUPNÝ *et al.* 2013; PAVLŮ – ZÁPOTOCKÁ 2013), by understanding them actually as “archaeological units of classification” (mainly of artefact styles, burial practices, etc.) rather than in the sense of “distinct groups of people”, a concept rightly criticised in any recently published papers (lastly cf. VANDER LINDEN 2016; FURHOLT 2018; 2019a; 2019b; FRIEMAN – HOFMANN 2019; KOLÁŘ 2020 and others). On the other hand, we see no reason not using at all terms like archaeological cultures or other similar entities to demonstrate archaeological data in their geographic-chronological contexts (cf. EISENMANN *et al.* 2018).

The people, or their groups, practicing the individual and strictly gender-specific burial ritual, and using artifacts and their combinations (mostly found in the forementioned graves) traditionally connected to the so-called CW archaeological culture, firstly occurred in Bohemia around (or shortly before) 2900 BC in the local cultural context of the post Baden Řivnáč and/or bit later Globular Amphora (GAC) cultures. A slightly later occurrence of the probably “incoming” GAC than the traditionally “local” origin of the post Baden Řivnáč culture is broadly accepted. There are two main models of possible contacts between the two partly co-existing cultures, discussed by Czech scholars: firstly the possible contemporaneous occupation by exploitation of different regions/territories, which finally comes to the more or less complete replacement of the Řivnáč settlements by those of GAC in the late phase, and secondly the infiltration of incoming “GAC-people” into the Řivnáč society (cf. NEUSTUPNÝ 1982; NEUSTUPNÝ *et al.* 2013; DOBEŠ 2013).

Today, the CW archaeological record is among the most significant from the perspective of Bohemian prehistory. The majority of finds come from burials (99%), with the number of examined graves around 1500 (last published estimate in NEUSTUPNÝ 2013, 131; states around 2000). With only few exceptions (cremation burials from Slaný, TUREK 2001, and Dobrovíz, unpublished), these are commonly inhumation graves with burials in a crouched position, oriented with the longer axis roughly on the east-west direction. Based on the anthropological determination of sex, males were placed on their right side, with their head to the west, while females on their left side, with their head to the east. Without exception, this is confirmed by aDNA analyses performed to date on skeletons from Bohemian cemeteries. Graves with a single burial are predominant, while those with multiple skeletons make up less than 10% of the total number (BUCHVALDEK 1986a, 94). These are usually graves with two skeletons; an extreme situation is that of a grave in Tuchoměřice with six buried individuals (BUCHVALDEK *et al.* 1997, 136–137, obr. 27–28, tab. XXIII).

According to parallels from neighbouring regions (central Germany, Moravia), the distance between graves in cemeteries (based on a single linkage analysis), and the occasional occurrence of graves in the middle of circular ditches, it is generally accepted in Bohemian archaeology that the graves were, as in other regions, originally covered by mounds (as early as BÖHM 1941, 178). However, only three cases of graves with preserved mounds from the territory of Bohemia have been recorded in the literature (MOUCHA 2000; SKLENÁŘ 2008, 193–194, obr. 9–10). According to many signs (regularly recurring deep black soil fills of grave pits, the taphonomic effects on skeletons and grave goods, etc.) it is possible to infer the original existence of grave pits/burial chambers. These were hollow (as with other groups of the CWC), with a wooden ceiling (and possibly a wall/floor construction), exceptionally with stone elements (cf. NEUSTUPNÝ – SMRŽ 1989, 325, 382; comprehensively in DOBEŠ – LIMBURSKÝ – PULPÁNOVÁ-RESZCZYŃSKA 2020).

Proven remains of CW settlements (i.e., sunken features dug by bearers of the CWC) are not known in Bohemia, contrary to any neighbouring regions (cf. in MELLER *et al.* 2019). In rare cases, traces of settlements are recorded in various secondary contexts, such as residual CW potsherds in pit-fillings of later periods (TUREK 1995; PROSTŘEDNÍK – VOKOLEK 1998), or terrain depressions filled with remnants CW occupation layers containing CW sherds. These are either of natural origin (DOBEŠ – LIMBURSKÝ 2013, 142–145, obr. 33), or they were depressions in the upper parts of not completely filled settlement features of chronologically preceding archaeological cultures.<sup>1</sup> The find of a typical CW pot with “short-wave moulding” (see BECKER 1955) from a karst cleft on Bacín Hill (MATOUŠEK – TUREK 1998) is interpreted as a case with a “cultic background”. Settlement evidence of the Corded Ware culture in Bohemia is briefly listed in ERNÉE *et al.* (2019, 777).

The region delimited by CW graves (c. 6,000 km<sup>2</sup>; see Fig. 2) occupies about a tenth of the territory of today's Bohemia (52,065 km<sup>2</sup>, see SALAČ *et al.* 2019, 20). Areas higher than 350/400 m above sea level, permanently settled since the Middle Ages, stayed uninhabited (or rather without identified graves). CW settlements are also missing in any regions where the previous prehistoric settlements are documented.<sup>2</sup> With exception of east Bohemia, the range of the area with the occurrence of CW graves has not changed much compared to the past (cf. BUCHVALDEK 1973). It is limited to north Bohemian plains, terrace steps and slightly undulating terrain in the Elbe, lower Vltava, middle and lower Ohře and Bílina river basins, i.e., regions of the so-called Bohemian “old settlement area” with a favourable climate and soil quality – an area permanently inhabited since the Early Neolithic.

<sup>1</sup> E.g., potsherds of an CW archaic amphora in a semi-sunken hut from the late phase of the Řivnáč culture (cf. DOBEŠ – KORENÝ 2010, 38–39, obr. 7, 10), alternatively it could be a chronological homogenous collection and, thus, direct evidence of mutual contacts between CW and Řivnáč cultures.

<sup>2</sup> West Bohemia (broader surroundings of Plzeň), partly south Bohemia.

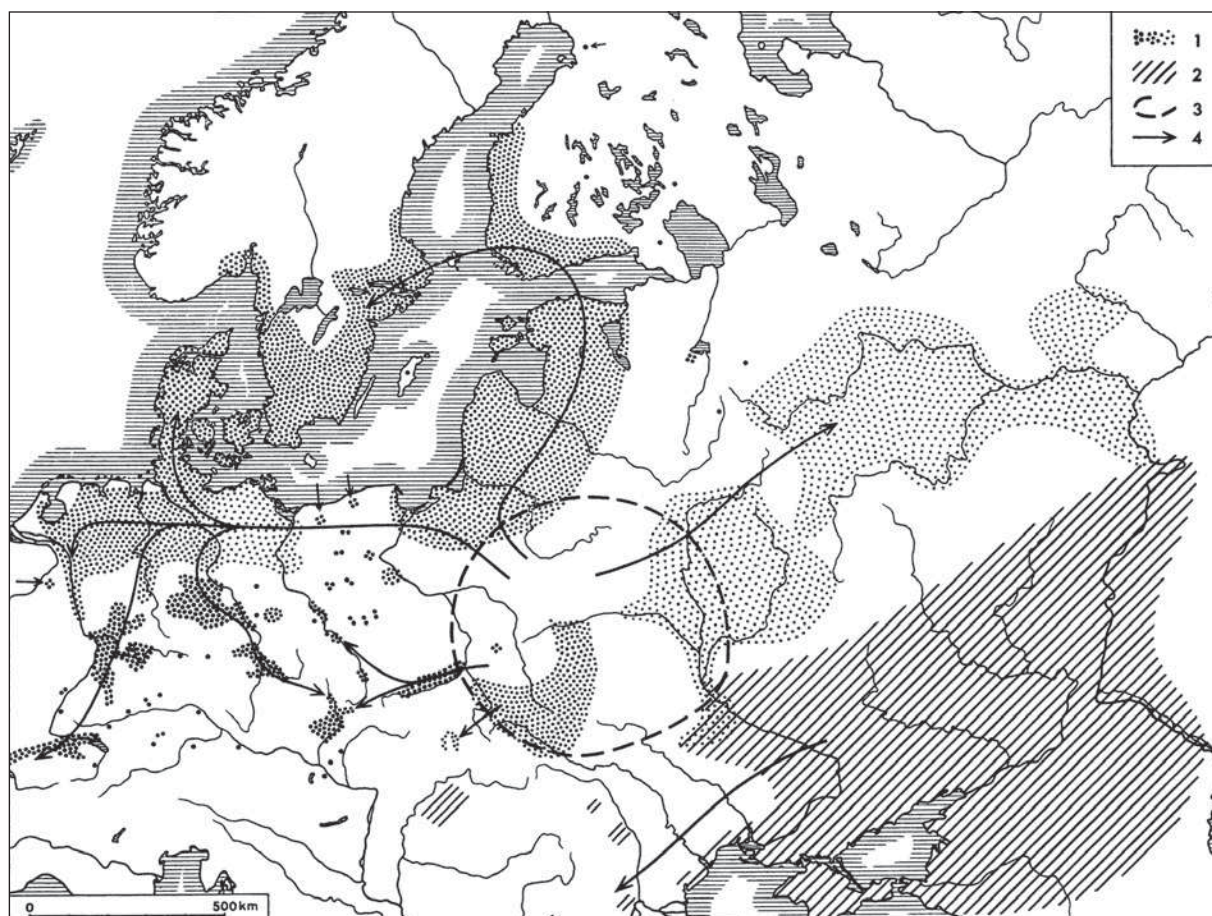


Fig. 1. The origin and distribution of the Corded Ware culture (CW) after BUCHVALDEK 1980.  
Dotted – Corded Ware culture, dashed – Pit Grave (Yamnaya) culture

According to various types of estimates (e.g., projections of the number of graves found in Vikletice (BUCHVALDEK – KOUTECKÝ 1970), to the length of watercourses or the extent of the aforementioned “old settlement area”), there were originally 100,000–200,000 burial mounds in Bohemia. In connection with other assumptions (CW culture lasted c. 400 years in Bohemia, each member of the community had the right to their own burial, on average one burial per grave pit, the absence of secondary graves in the burial mounds, population stability, 4% annual mortality, etc.), 5,000–10,000 inhabitants were to have lived in the aforementioned settlement area (blue marked area in Fig. 2) at the same time (BUCHVALDEK 1976; 1979).

## 2. History of research of the Bohemian CW

The origin of the CW was initially sought in Thuringia as its mother region, while Bohemia was considered a peripheral area of its expansion (Píč 1899, 83; BUCHTELA – NIEDERLE 1910, 25–32; STOCKÝ 1926, 82; as one possible alternative in FILIP 1948, 143–148, 403). Ivan Borkovský (Borkovskij), who was well versed on the issue of Eastern European archaeological sources, first appeared in Bohemian archaeology with the thesis on the eastern origin of the CW (BORKOVSKÝJ 1933; 1934; 1936; 1937). Borkovský



mainly pointed out that the CW has no direct cultural-typological patterns in Central Europe (which, by the way, was later confirmed by the finding that the so-called “Mansfeld group” does not belong to the beginning but to the end of the development of the CW, cf. FISCHER 1951), i.e., that the source of the CW must be sought elsewhere. The origin of the bearers of the CW in the east was later preferred in J. Böhm’s monograph on Bohemian-Moravian prehistory published during the German occupation in the first half of the 1940s. Both of these scholars, Borkovský and Böhm, linked the eastern origins of the CW to the arrival of the first Indo-Europeans in Central Europe (BÖHM 1941, 173, 217–218).

After the war, J. FILIP (1952) pointed out the importance of a detailed study of this issue and, as the director of the Institute of Prehistory at Charles University, he initiated the first comprehensive elaboration of the Bohemian CWC (BUCHVALDEK 1953). Although Buchvaldek’s master’s degree thesis was not published as a whole, in a series of studies the typologically latest *local third find group* (BUCHVALDEK 1955) and both earlier find groups (BUCHVALDEK 1957) were gradually defined, i.e., the *Common European A-horizon* (the *first find group*) and the *second find group* (simplified grave units with vessels decorated with a motif of a fir twig / “Tannenzweigmuster” / and the so-called “Fischgrätenbecher”). Inspired by the works of P. V. GLOB (1945), U. FISCHER (1953; 1956) and K. W. STRUVE (1955), Buchvaldek’s entire concept was then presented in a monograph in the mid-1960s (BUCHVALDEK 1967), and was later elaborated even further by the author (BUCHVALDEK 1986a). In light of new findings, Buchvaldek’s concept in its basic message stood up against alternative approaches (cf. an outdated attempt at a new-old chronology of the Corded Ware culture placing the Mansfeld group at its beginning (HEIN 1987; 1990), or the defence of the A-horizon in Buchvaldek 1997 in the context of other essays in this volume). Proving correct in light of aDNA analyses (HAAK *et al.* 2015), is the author’s lifelong conviction (shared with many predecessors and companions) that the complex of Corded Ware cultures is clearly discontinuous in relation to the older Central European Neolithic-Eneolithic substrate, i.e., that its source is found in the migration of its carriers arriving here from somewhere in the east (see e.g., BUCHVALDEK 1980, 403, Fig. 1; here Fig. 1).

Buchvaldek’s concept was not unconditionally accepted in Czech archaeology, whether it was the legitimacy of the A-horizon definition and the related invasion/mobility of the CW population (NEUSTUPNÝ 1965, 444–451, 455),<sup>3</sup> the subsistence system of the CW (NEUSTUPNÝ 1969a; VENCL 1994) or the degree of kinship of the deceased and the continuity of burying in cemeteries (cemeteries as results of continuous burying settled small families versus discontinuous burying larger and more mobile communities: NEUSTUPNÝ 1983, 109–131 and 164–165 versus BUCHVALDEK – KOUTECKÝ 1972, 168–172). Many interpretations are still the subject of debate, while others can be considered obsolete in the context of new aDNA research (thesis on the Central European origin of the CW bearers, most recently in NEUSTUPNÝ 2013, 154).

As was the case elsewhere, the chronological fixation of the Corded Ware culture underwent significant changes after World War II. In the Bohemian context, its origin was previously placed on the level of the Stroked Pottery culture, among other reasons due to the poorly evaluated find in Řež near Prague (STOCKÝ 1926, 89), and it was supposed to have coexisted with other cultures of the so-called “transitional period”<sup>4</sup> until the beginning of the Bronze Age (for a detailed history of research until the 1950s, see BUCHVALDEK 1967, 9–17).

As in neighbouring territories, its chronological position was gradually revised in the context of the application of radiocarbon dating, stratigraphy analyses in central German mounds (FISCHER

<sup>3</sup> It should be noted that in the background of attempts to eliminate the A-horizon as the type-bound earliest horizon of Corded Ware in Europe, there have always been concepts that deny the migration theory.

<sup>4</sup> The term used in the Bohemian archaeology during the pre-WWII times as an equivalent of now used term “Eneolithic”.

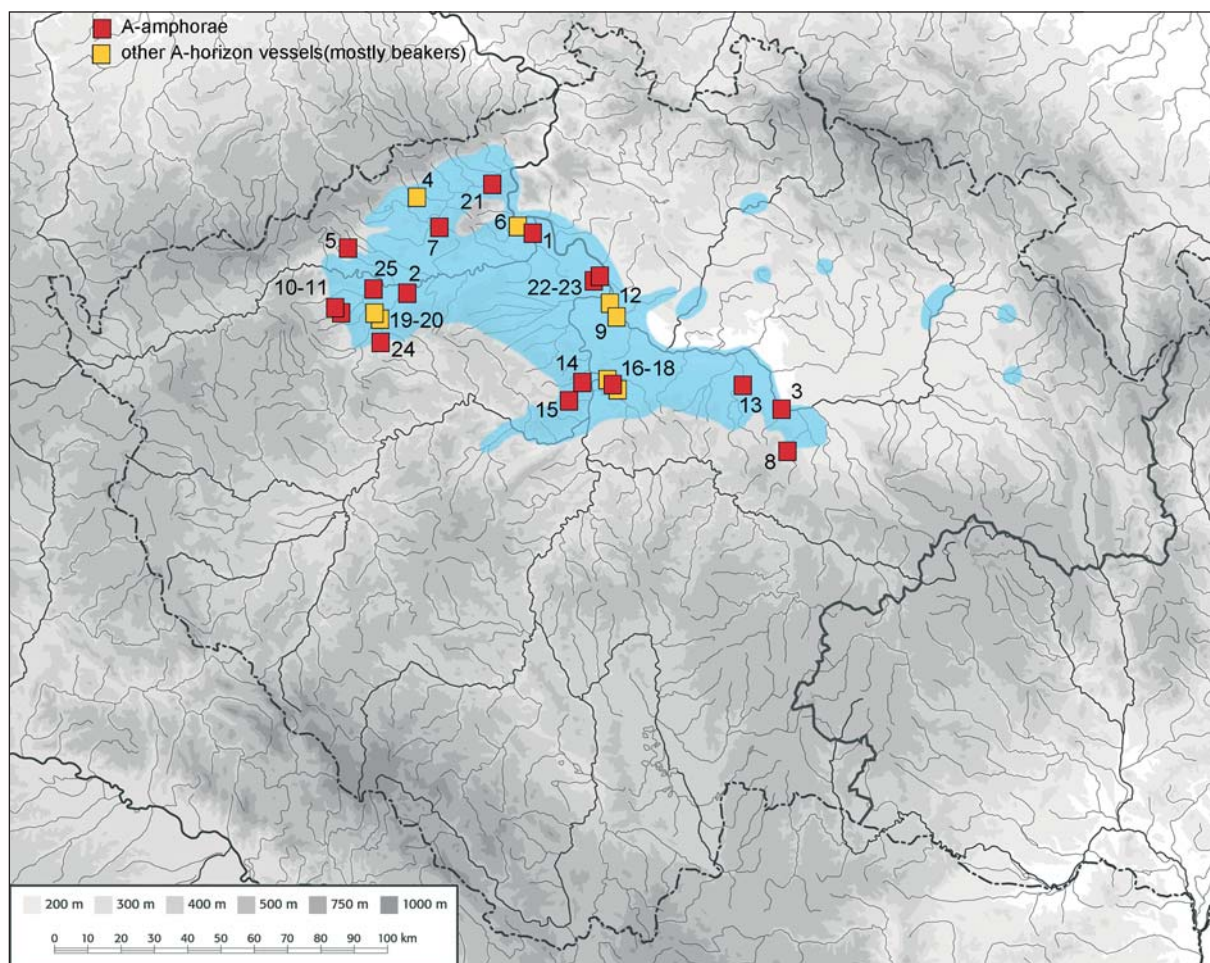


Fig. 2. Bohemia. Finds of the CW A-horizon on the background of the CW settled territory (blue).

1. Brňany, Litoměřice district; 2. Dobříčany, Louny district; 3. Kolín, Kolín district; 4. Konobřez, Most district; 5. Krbice, Chomutov district; 6. Lovosice, Litoměřice district; 7. Lužice, Most district; 8. Malešov, Kutná Hora district; 9. Neratovice, Mělník district; 10–11. Nové Třebčice, Louny district; 12. Obříství, Mělník district; 13. Pečky, Kolín district; 14. Praha-Motol; 15. Praha-Řeporyje; 16–18. Praha-Vinohrady; 19–20. Siřem/Cárka, Louny district; 21. Stadice, Ústí nad Labem district; 22–23. Vlněves, Mělník district; 24. Vrbice, Rakovník district; 25. Žabokliky, Louny district. Graphic by M. Dobeš, after BUCHVALDEK 1967, 1986b; CVRKOVA – KOUTECKÝ – BRUS 1991; DOBEŠ – BUCHVALDEK 1993; DOBEŠ 1997; SMRŽ – BUCHVALDEK 1998; DOBEŠ – LIMBURSKÝ 2013 and PECINOVSKÁ 2012

1953; MILDENBERGER 1953), and inspirational works from Northern Europe (GLOB 1945). Initially, the possibility of the coexistence of the CWC with other Eneolithic cultures was accepted (with certain reservations), its beginning was placed in tandem with the Salzmünde stage of the Funnel Beaker culture and the end with the earliest Únětice culture, with the contemporaneity of the CW with the Bell Beaker culture being assumed with certainty (BUCHVALDEK 1957, 399, 401; BUCHVALDEK 1958). The development of the concept of archaeological cultures as essentially successive entities, which is generally accepted in Bohemian archaeology today, was proposed from the beginning especially by E. NEUSTUPNÝ (1956, 68–69; 1965, 413–418, 453), mainly on the basis of horizontal-stratigraphic observations. According to Neustupný, the long-term coexistence of two different archaeological cultures in such a small region cannot be assumed, as their mutual contacts in the given archaeological

record would certainly be apparent.<sup>5</sup> Neustupný was also one of the first supporters (and creators) of the generally accepted modified radiocarbon chronology – on the basis of the dendrochronological correction of the data available at the time, he defined an until today acceptable interval of 2850–2450 BC for the Corded Ware culture (NEUSTUPNÝ 1969b, 791, 799, 809).

### 3. The earliest Corded Ware in Bohemia

In this context, we consider several categories of material culture already apparent at the beginning of the development of the Corded Ware culture and that are linked by the strict gender-specific mortuary behaviour described above.

#### 3.1. Finds of the A-horizon (Common European Horizon)

These are types of pottery (vessels) and battle axes considered by certain researchers in the middle of the last century to be the earliest within the CW and that were also sometimes associated with the beginnings of the arrival of the population of eastern origin into Central Europe (GLOB 1945; STRUVE 1955; in Bohemia BUCHVALDEK 1957). The set of grave finds consists mainly of amphorae decorated on the shoulders with a motif of vertical engraved/fluted lines, mostly bordered by incisions or zigzag, and also decorated on the neck (“Strichbündelamphoren”), archaic types of beakers, A-axes and sometimes stylishly similar vessels of other forms.

##### 3.1.1. Graves with pottery attributed to the A-horizon

Of the ceramic vessels, amphorae are typologically easier to define than other types and are documented in Bohemia at roughly fifteen sites (see *Fig. 2*), where a maximum of two specimens occur. Earlier finds are mostly without further data and, according to a brief description, they are usually pottery from inhumation graves or isolated finds, given the circumstances probably also of grave origin (*Fig. 3*). Only in two cases (Kolín, Dobříčany, *Fig. 3.10, 13*) is the posture of the individuals specified, both of which involved female burials, crouched on the left side. The preserved skull from the grave in Malešov (*Fig. 3.5*) is also anthropologically determined as belonging to a female (CHOCHOL 1982). The connection of the discussed amphorae to female graves is confirmed without exception by newer well-documented finds, such as graves in Stadice, Vliněves (*Fig. 8*), and Krbice (based on the location of grave goods and upper part of the body in the eastern part of the grave, *Fig. 5*). Although the number of these cases is, of course, low, with the current state of the source inventory they seem non-random. The affiliation of these amphorae exclusively to female graves may be the reason they almost never encounter other A-horizon forms, especially battle axes.

It is worth mentioning here that this is not the only case of a link between a certain type of vessel and gender in the Bohemian CW.<sup>6</sup> The presumed chronological position of the graves with the types of amphorae discussed here at the beginning of the CW is clearly confirmed by both radiocarbon dates from Vliněves and Stadice (*Fig. 9*).

<sup>5</sup> As in Bohemia, for instance, in the case of the Boleráz stage of the Baden culture or the Salzmünde stage of the Funnel Beaker culture, cf. ZÁPOTOCKÝ 2000, 114–117, the Řivnáč culture or the Globular Amphora culture (GAC), ZÁPOTOCKÝ 2013, 100.

<sup>6</sup> For example, in the context of the second find group of the Bohemian CW after Buchvaldek (BUCHVALDEK 1967), the pairs of jar-like small vessels are bound only to female graves and beakers are completely absent in female graves in the following third (late) find group after Buchvaldek (see BUCHVALDEK 1974).



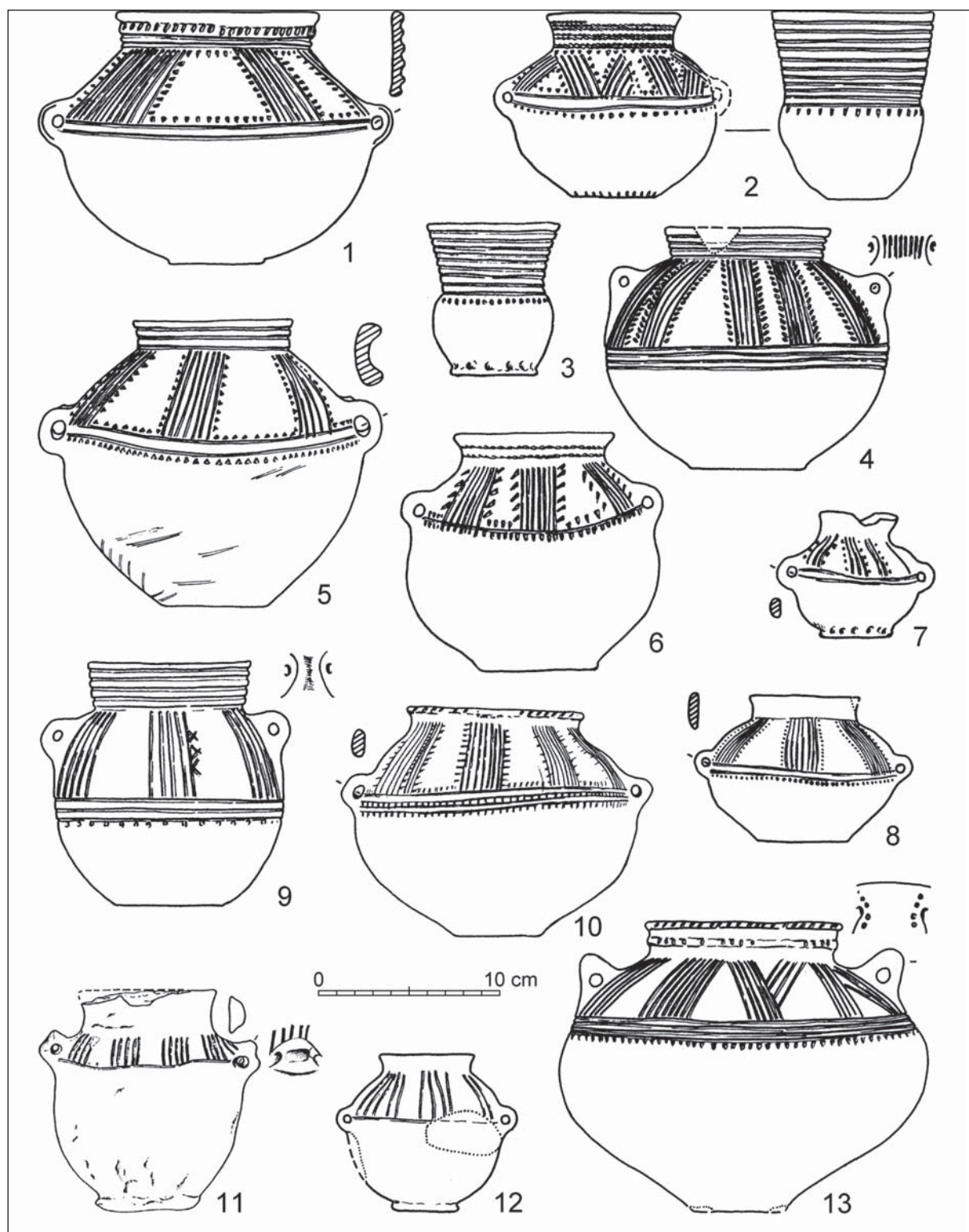


Fig. 3. Bohemia. Old finds of A-amphorae and A-beakers. 1. Žabokliky, Louny district; 2–3. Praha-Vinohrady (Grave I and II); 4. Brňany, Litoměřice district; 5. Malešov, Kutná Hora district; 6. Pečky, Kolín district; 7–8. Nové Třebčice, Chomutov district (two graves); 9. Praha-Řeporyje; 10. Kolín, Kolín district; 11. Vrbice, Rakovník district; 12. Praha-Motol; 13. Dobříčany, Louny district.

Graphic by M. Dobeš, after BUCHVALDEK 1986b and DOBEŠ 1997



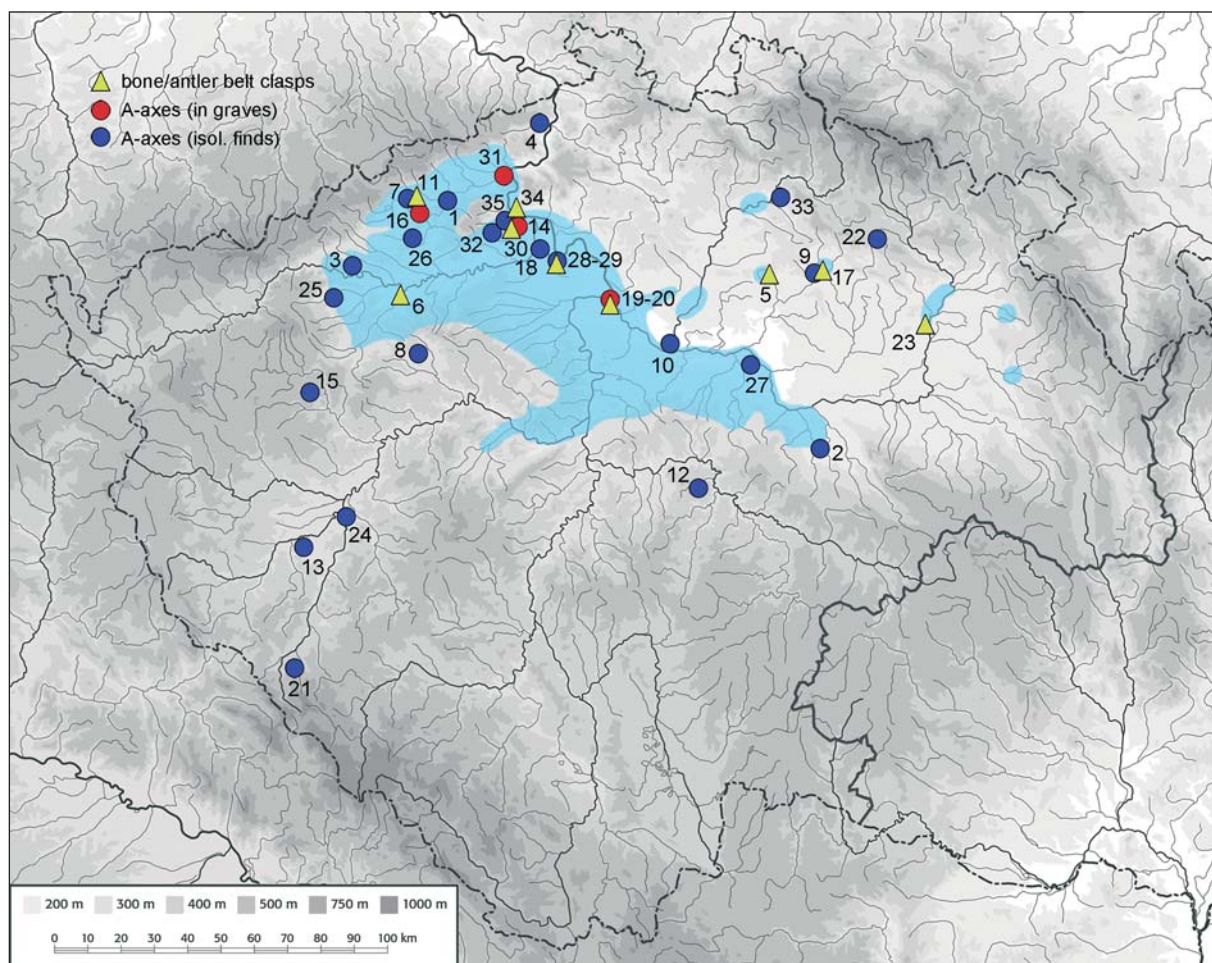


Fig. 4. Bohemia. A-battle axes and antler/bone belt clasps finds (blue – assumed territory settled by the CW).

1. Bílina, Teplice district; 2. Čáslav, Kutná Hora district; 3. Čermníky, Chomutov district; 4. Děčín, Děčín district; 5. Dětenice, Jičín district; 6. Dobříčany/Veletice, Louny district; 7. Dolní Jiřetín, Most district; 8. Chrástany, Rakovník district; 9. Jičíněves, Jičín district; 10. Káraný, distr. Praha-východ; 11. Konobřez, distr. Most; 12. Lbosín, Benešov district; 13. Losina, Plzeň-jih district; 14. Lovosice, Litoměřice district; 15. Močidlec, Karlovy Vary district; 16. Most, Most district; 17. Nemyčevy, Jičín district; 18. Nové Dvory, Litoměřice district; 19–20. Obrázkov, Mělník district; 21. Opálka, Klatovy district; 22. Pecka, Jičín district; 23. Platištná nad Labem, Hradec Králové district; 24. Plzeň-Hradiště; 25. Podlesice, Chomutov district; 26. Polerady, Most district; 27. Přední Lhota, Nymburk district; 28–29. Roudnice nad Labem, Litoměřice district; 30. Sulejovice, Litoměřice district; 31. Trmice, Ústí nad Labem district; 32. Třebenice, Litoměřice district; 33. Turnov, Semily district; 34. Velké Žernoseky, Litoměřice district; 35. Vchynice, Litoměřice district. Graphic by M. Dobeš, after BUCHVALDEK 1967, ŠEBELA 1993, CYRKOVÁ – KOUTECKÝ – BRUS 1991, DOBEŠ – BUCHVALDEK 1993, ČECH – ČERNÝ 1997, METLIČKA – ŘEZÁČ – TUREK 2007 and PECINOVSKÁ 2012

While other types of vessels usually assigned to the A-horizon discussed here are not as stylistically delimited as amphorae, according to the individual decorative and shape attributes they can also at least roughly be singled out. These are mainly low beakers with an S-shaped profile decorated on the neck with grooves rather than cord prints, which are, as on the amphorae, bordered with lines of coarse incisions. In addition to stylistic similarities, their connection to A-horizon amphorae is also supported by their joint occurrence in a child's (?) grave in Praha-Vinohrady (Fig. 3.2). According to a small number of existing finds, the described beakers were found twice in women's graves (Konobřez and

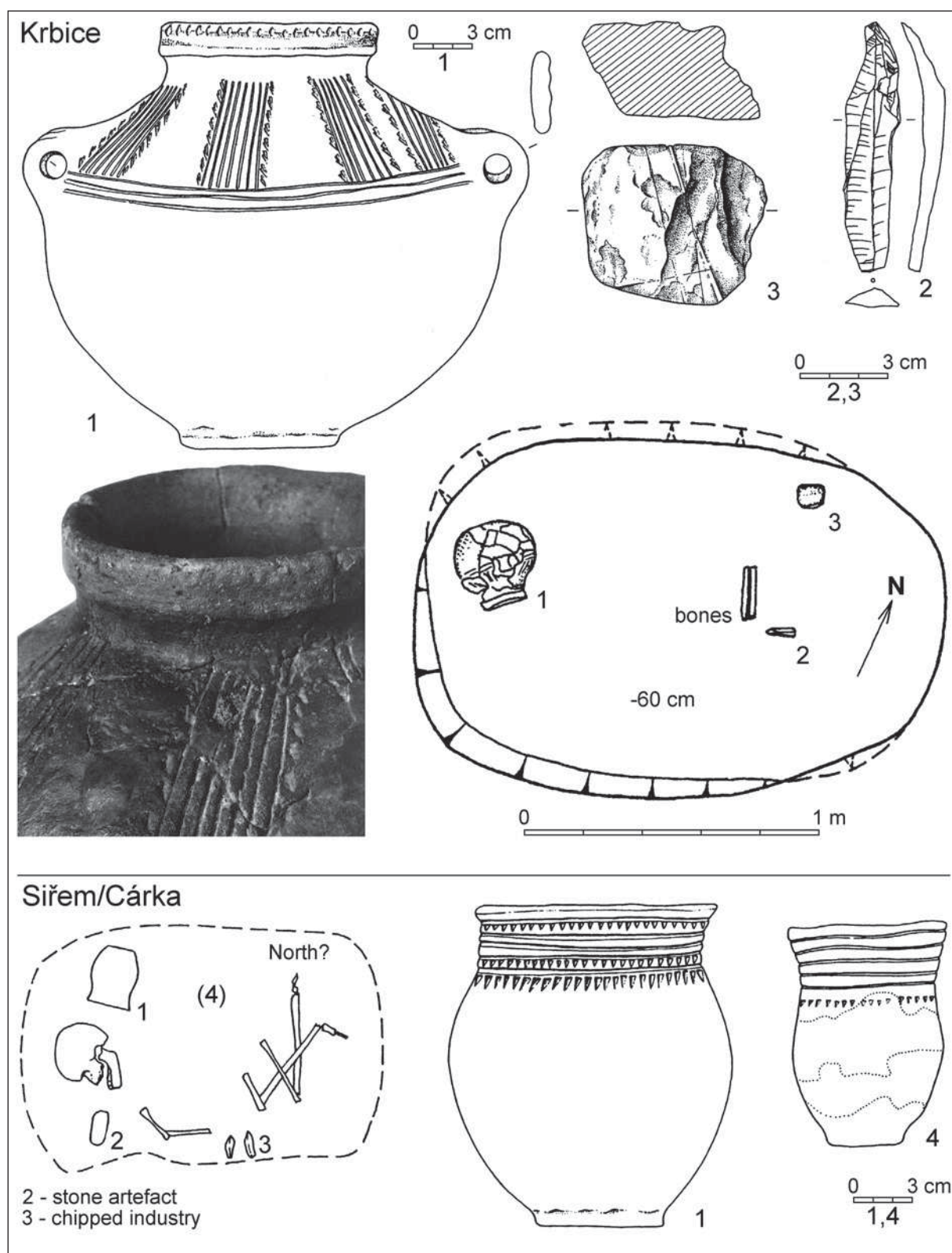


Fig. 5. Bohemia. Graves containing CW A-horizon finds. Krbice, Chomutov district: 1 pottery, 2–3 stone.

Siřem/Cárka, Louny district: 1 and 4 pottery, 2 and 3 stone.

Graphic by M. Dobeš, after DOBEŠ 1997 and SMRŽ – BUCHVALDEK 1998

Neratovice, *Fig. 6*) and once in a male/child's grave (Sřem/Cárka, *Fig. 5.4*). The grave from Sřem/Cárka is also remarkable for the occurrence of a pot-like vessel decorated in the same style (*Fig. 5.1*). It is unfortunate that the stone artifact from this grave (no. 4: 2, battle axe?) has not been preserved even in the form of a simple sketch. The vessel from the grave 166 in Obříství (*Fig. 7*), which is on its own completely culturally-chronologically ambivalent and can be dated to the CW only via related finds and radiocarbon dates, is a bit similar only to the vessel from the male grave in Sřem/Cárka (*Fig. 5.1*).

Important from the perspective of the chronological connection between the CW and the preceding Eneolithic settlement is the grave from Konobřez. Its fill contained residual sherds of the Řivnáč culture (*Figs. 6.4–5*) apparently coming from the Řivnáč settlement documented here by semi-sunken hut (not yet published). The building of CW barrows at abandoned Řivnáč settlements (and GAC settlements, see BENEŠ – DOBEŠ 1992) is repeatedly documented in Bohemia, which still confirms the relative chronological position of the CW after the Řivnáč (GAC) cultures. At the same time, these find situations raise questions about the reasons of such behaviour. There is a wide range of possible explanations.<sup>7</sup> It should be noted, however, that the time gap between older (abandoned) settlements and newly established burial mounds cannot be more exactly determined in any concrete situation (both the classical archaeological classification and the difficulties of interpreting interval <sup>14</sup>C data run up against their testimonial limits in this respect). Still, it seems that the situation of chronologically closely related phases has not yet been documented (according to a preliminary examination, in Konobřez it is probably a barrow at a settlement from the early phase of the Řivnáč culture, i.e., with a certain time gap). As is the case elsewhere, the number of graves containing A-horizon defined vessels (find group I – see above) is not high in Bohemia. If we compare only units in which amphorae occur as the most common Bohemian CW form, A-amphorae make up less than 5% (BUCHVALDEK 1986a, *Fig. 57*). The rest of the amphorae belong to either find group II (almost 30%) or find group III (about two-thirds of all amphorae).

However, any demographic considerations based on a given ratio are relativised by other circumstances, such as the variable connection between amphorae and gender (in the first find group only in female graves – see above, in contrast to the third find group, where they are common among both sexes) and in particular the unknown number of aceramic graves belonging to the earliest CW (see Chapter 3.3).

### 3.1.2. Graves with A-battle axes

The vast majority of A-battle axe finds are so-called isolated finds without further find circumstances, which probably came mostly from disturbed graves. For example, M. Buchvaldek counted about 70 specimens in central Germany, of which only 6–7 were attributed an origin from a grave, and with only one being found with pottery in a grave (BUCHVALDEK 1986a, 29; grave with A-battle axe and pottery: Helfta, MATTHIAS 1974, 132, Taf. 58:4–6). In Bohemia, the ratio of grave finds to isolated finds is a bit more balanced, although isolated finds again significantly predominate (26: 4, see *Fig. 4*). An extraordinary position among burials with A-battle axes occupies the grave No. 166 from Obříství (*Fig. 7*), containing a combination of an A-battle axe, belt clasps, pottery and chipped industry (with radiocarbon date 2910–2876 cal BC 2σ; see *Fig. 9*), including a very well preserved inhumation burial. A grave from Most reportedly also contained pottery (DOBEŠ – BUCHVALDEK 1993, 212/XI, *fig. 17*).<sup>8</sup> The remaining graves (Lovosice; Trmice, grave 14, see *Fig. 8*) are aceramic, unfortunately without

<sup>7</sup> An effort to symbolically control the landscape by newcomers, a different subsistence system and, thus, a different treatment of the landscape, the use of abandoned settlements for practical reasons – burial mounds are perhaps better built in places with uncompleted succession, etc.

<sup>8</sup> Unfortunately, neither the pottery nor its description have been preserved.



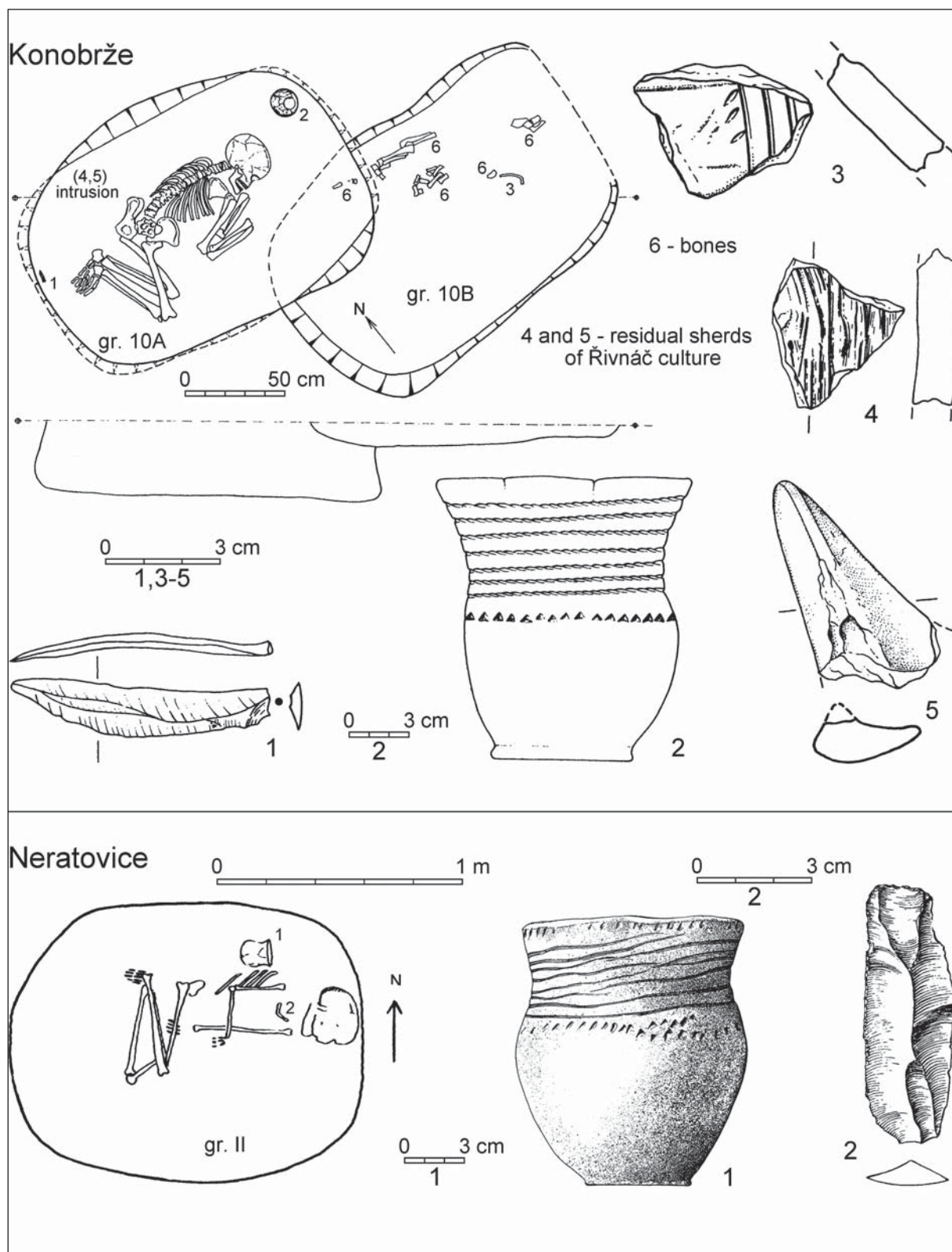


Fig. 6. Bohemia. Graves containing CW A-horizon finds. Konobřez, Most district: 1 stone, 2–5 pottery, 6 bone. Neratovice, Mělník district: 1 pottery, 2 stone. Graphic by M. Dobeš, after DOBEŠ – BUCHVALDEK 1993 and KABÁT – ZÁPOTOCKÝ 1962



more detailed field documentation, or with heavily disturbed burials (VON WEINZIERL 1894, 145, Fig. 102–103; CVRKOVA – KOUTECKÝ – BRUS 1991, 14, fig. 10).

A look at the map of Bohemia shows that a significant number of the sites with A-axes are located on the edge or outside the area permanently inhabited since the Neolithic and later used for burying by the CW groups (Fig. 4). A similar distribution pattern can be observed in other areas (e.g. central Germany) as well (see BUCHVALDEK 1986a, 40, fig. 21; 1986b, 148–149). Of course, it is possible to speculate on various causes for such an image, such as the relationship of newcomers with the local population, the different form of subsistence, prospecting activities, etc., with the knowledge that the CW settlements in hilly areas are a proven fact today (see MÜLLER *et al.* 2009, for Bohemia, e.g. the situation at the Řivnáč culture hilltop settlement in Nalžovice, DOBEŠ – KORENÝ 2010, 38–39, fig. 7:5 and fig. 10).

However, the distribution of single battle axes may also be related to another fact – the belief in the protective power of stones, which was still widespread in Bohemia (and probably elsewhere in Central Europe) at the beginning of the last century and was associated mainly with the belief in the ability of stone axes to protect a building from lightning/thunder (“Donnerkeile”), protection of the crops in the fields, etc. For this reason, axes were set behind the trusses of buildings and cases of their burying at field boundaries are also documented. Axes were commonly traded at fairs and annual markets, and no one was interested in their origin or where they were found. Pieces without sufficient find circumstances can in particular be “false deposits” (see MILDENBERGER 1969, 3–14; SKLENÁŘ 1999, 23–65) and create completely false distribution patterns not corresponding to the prehistoric reality. Similar to amphorae, A-axes represent only a small percentage of the collection of all CW battle axes in Bohemia (~2–4%, see BUCHVALDEK 1957, 377; BUCHVALDEK 1986a, 91–92).

### 3.2. Graves with antler/bone belt clasps

Antler or bone clasps occur in two basic forms in CW graves (cf. PEŠKA 2002, 268–276; WEINER – CLASSEN – RIEDER 2013, 47–52, 63–65). To date, only plate-like artefacts with heart-shaped terminals have been found in Bohemia (J. Peška’s types 4 and 5), though these are otherwise spread from the Baltics to Hesse and Switzerland (PEŠKA 2002, fig. 14). However, their largest concentration is found in Bohemia, where about half of all find locations are registered (currently nine, see Fig. 4; J. PEŠKA 2002 recorded seventeen of them throughout Europe, new finds come from Oblaczkowo and Żąbicie: PAWLAK 2013, 248–252, fot. 1–2; POSPIESZNY 2015, 266, table 1, fig 2:C, D). Only in the peripheral areas of their occurrence (Switzerland, the Baltics) were they found at settlements, whereas elsewhere they are known exclusively from graves. If it is possible to judge from a combination of the archaeological (position of the skeleton in the grave pit) and anthropological determination of the deceased’s sex, the clasps are exclusively a male attribute.

Most of them are aceramic graves in which only occasionally axes, silex blades, or bone points/needles do appear, along with the clasps. Battle axes allow the dating of these clasps to the early stage of the Corded Ware culture (specimens with A-axes: Oblaczkowo, PAWLAK 2013, 248–252, fot. 2; Obríství, Fig. 7 in this work; Nohra, derivative of A-axe, see MATTHIAS 1987, 48, Abb. 2a, Taf. 43:5–7), with a possible smaller chronological extension (Dětenice, belt clasp accompanied by a faceted battle axe, see MOUCHA 1958, 64–65, fig. 22). Pottery was found in four graves containing these belt clasps. With the exception of an unconvincing pot from Obríství (Fig. 7), these are all typologically archaic beakers (Krusza Zamkowa, Żerniki, Edertal-Bergheim, see PEŠKA 2002, obr. 13; BRENDOW 1977, 57, Abb. 3:1).



Fig. 7. Bohemia. Graves containing CW A-horizon finds. Obříství, Mělník district.  
Photo by M. Pecinová, graphic by M. Dobeš



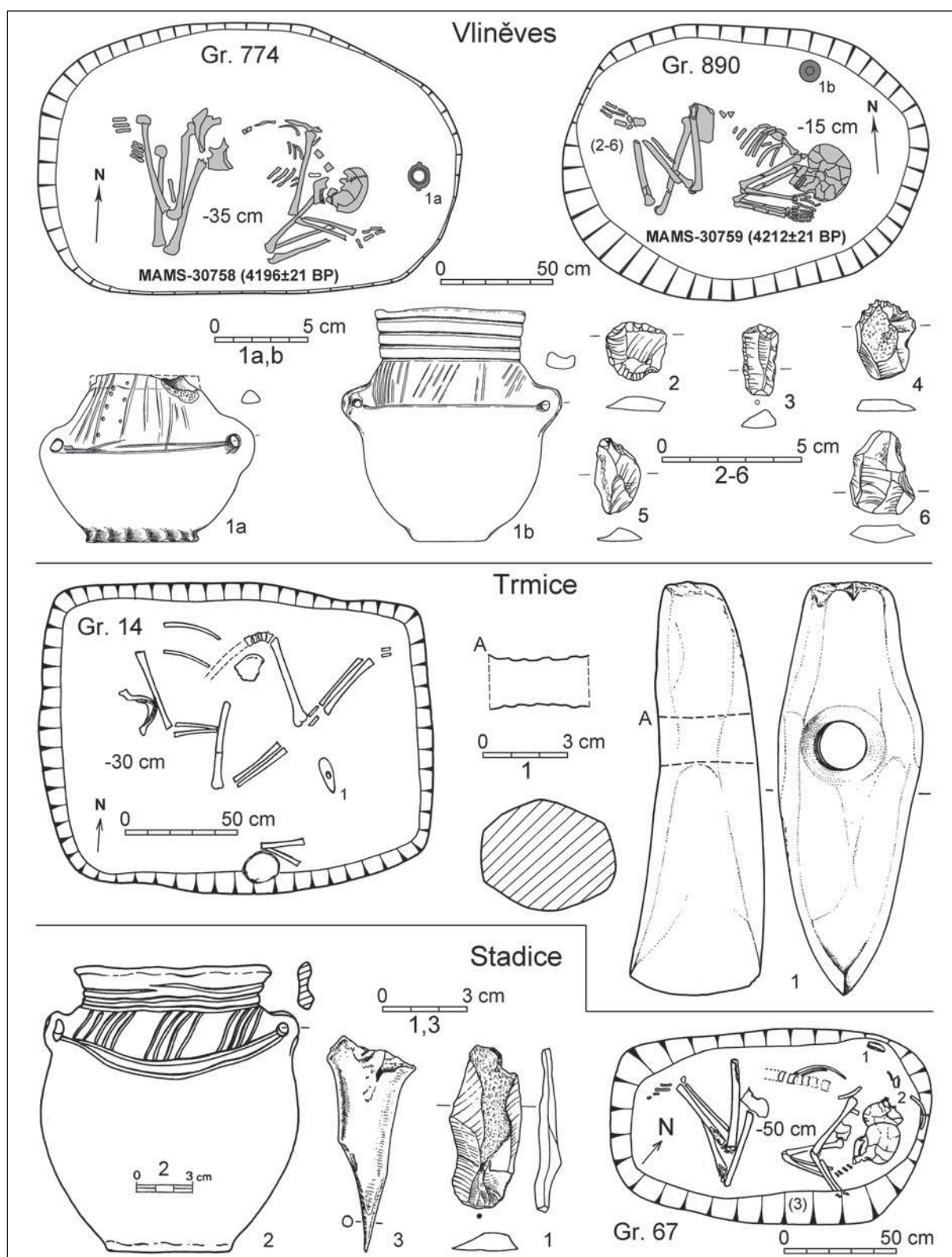


Fig. 8. Bohemia. Graves containing CW A-horizon finds. Vliněves, Mělník district: 1 pottery, 2–6 stone. Trmice, Ústí nad Labem district: 1 stone. Stadice, Ústí nad Labem district: 1 stone, 2 pottery, 3 bone. Graphic by M. Dobeš, after CVRKOVÁ – KOUTECKÝ – BRUS 1991 and DOBEŠ – LIMBURSKÝ 2013

Site	Grave	14C indicator	14C BP	14C BC 1σ	14C BC 2σ	Material	Kolagen %
Plotiště nad Labem	LX	MAMS-41376	4271±25	2904-2887	2914-2879	<i>Homo</i> , bone undet.	1,2
Obříství	166	MAMS-30795	4259±23	2900-2884	2910-2876	<i>Homo</i> , fibula	0,7
Stadice	67	MAMS-45793	4314±25	2924-2895	3010-2889	<i>Homo</i> , cranium	1,7
Vliněves	890	MAMS-30759	4212±21	2889-2765	2894-2703	<i>Homo</i> , fibula	2,2
Vliněves	774	MAMS-30758	4196±21	2881-2760	2889-2696	<i>Homo</i> , fibula	2,1

OxCal v4.4.2 Bronk Ramsey (2020); r:5 Atmospheric data from Reimer et al (2020)

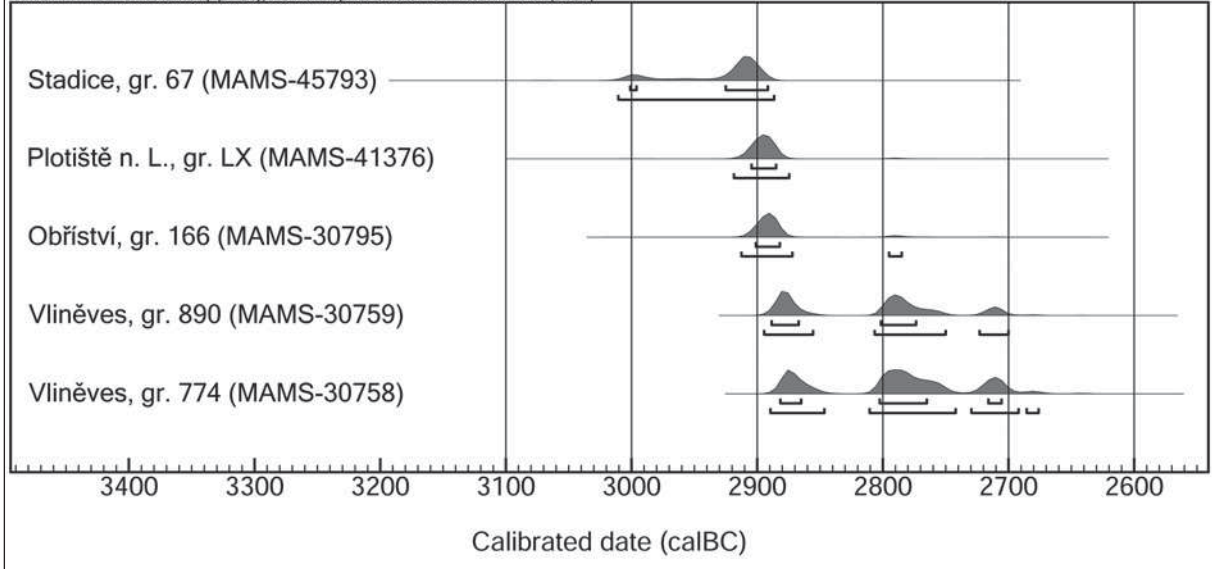


Fig. 9. Bohemia. <sup>14</sup>C dates from graves of typologically archaic CW. Graphic by M. Langová, M. Dobeš

A higher age within the CW is also supported by the radiocarbon dates, with the substantial length of their 2-sigma intervals always falling into the first third of the 3<sup>rd</sup> millennium BC (POSPIESZNY 2015, table 2; here data from Plotiště nad Labem and Obříství, see Fig. 9).<sup>9</sup>

### 3.3. Aceramic Kalbsrieth-type graves

Male graves with a funeral rite corresponding to standard CW burials, but usually equipped only with flint blades or completely free of grave goods, were singled out by U. FISCHER (1953, 168; 1956, 109–111) on the basis of their stratigraphically primary position in central German barrows like the Kalbsrieth group, chronologically preceding the CW. While formally identical graves also often occurred in Bohemia, due to the absence of barrows (i.e., the observation of stratigraphic relationships in their mounds) and, for a long time, also of the radiocarbon data, a more precise dating of these graves was not possible. However, due to their repeated occurrence in CW cemeteries, they were always considered an integral part of them and their at least partial chronological connection to the A-horizon was never doubted (already in BUCHVALDEK 1957, 380–381; see also BUCHVALDEK 1986b, 149).

<sup>9</sup> Although Bohemian belt clasp finds do not deviate from the aforementioned general characteristics, it is necessary to draw attention to the former dating of some graves with belt clasps already to the Bell Beakers (Plotiště nad Labem, compare the radiocarbon date in Fig. 9 and VOKOLEK 1981, 483, 485), resulting from the misinterpretation of the find from Sulejovice (MOUCHA 1958, 62–63, fig. 20 and 37, on this MOUCHA 1992, 84–86, Abb. 4).



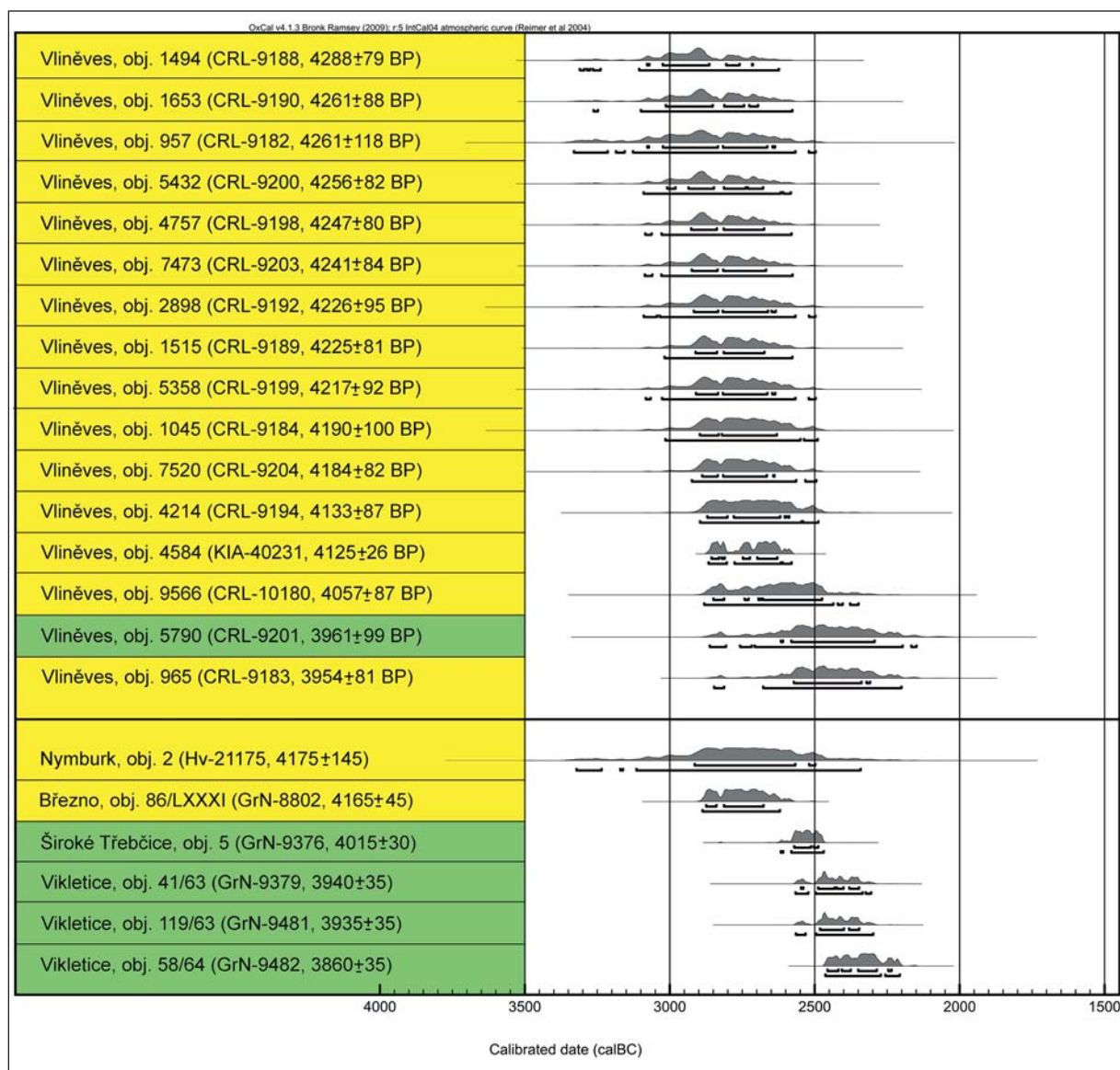


Fig. 10. <sup>14</sup>C dates of Bohemian Corded Ware (state 2013). Aceramic graves – yellow; those also containing vessels – green. After DOBEŠ – LIMBURSKÝ 2013. Graphic by P. Limburský, M. Dobeš

The rate of aceramic graves (all, not only adult men) at CW cemeteries in Bohemia varies, from 15% (Vikletice, BUCHVALDEK – KOUTECKÝ 1972, 158–159) up to 50% (Trmice, CVRKOVÁ – KOUTECKÝ – BRUS 1991). In Čachovice, roughly every third grave is aceramic, with the vast majority found in grave group III, which is dated at the beginning of the development of this cemetery, i.e., in the earlier period of the CW (NEUSTUPNÝ – SMRŽ 1989, 336–337, tab. 4). The situation in Trmice also points to the earlier dating of aceramic graves, where archaeologically datable graves (i.e., those with chronologically sensitive grave goods) fall exclusively into Buchvaldek's first and second find groups. In Vliněves, with roughly 40% of aceramic graves they were also radiocarbon dated for the first time, in order to rule out their alternative dating in the Funnel Beaker culture (DOBEŠ – LIMBURSKÝ 2013, 103–108, Fig. 52). Although they were not AMS dated, the measured 2-sigma intervals fall mainly into the earlier phase

of the Bohemian CW (Fig. 10). A series of new, soon to be published, data only confirms this dating of aceramic graves (PAPAC *et al.* 2021).

## Conclusion

Graves containing finds dated in the earliest phase of the CW (the so-called A-horizon) currently number around thirty in Bohemia, i.e., ~2% of the total of ca. 1500 graves investigated here. This ratio is largely consistent with shares determined earlier when comparing amphorae or battle axes. However, the relatively low amount of graves with these chronologically sensitive “earliest” artefacts (i.e., A-amphorae, A-battle axes, etc.) not necessarily correspond to prehistoric reality, because most of graves without any grave goods or with artefacts lacking chronological sensitivity (chipped industry) are often associated with the CW only by the same funeral rite (so-called aceramic graves), probably belong to the earlier horizon according the new radiocarbon dates. It means, the portion of the earliest graves of the total number of 1500 CW graves could be much higher.<sup>10</sup>

According to new radiocarbon dates and the combination of finds in graves, it is clear that the earliest CW horizon in Bohemia, besides the aforementioned aceramic graves and the standard A-horizon combination (A-amphora, A-beaker and A-battle axe), also consists of graves containing plate-like belt clasps, or rather their occurrence begins in this horizon. New finds reconfirm that battle axes and belt clasps are attributes of the male part of the population. However, vessels predominates in female graves, and amphorae, based on current finds, occur exclusively in them.

According to the 2-sigma intervals of newest radiocarbon dates, the earliest burials containing grave goods connected with the initial phase of the CW (A-horizon, first material group after Buchvaldek) occur in Bohemia around 2900 BC at latest. In this context it will be important to test, for example, the possible influence of diet of the supposed migrants on the measured data (see OLSEN – HEINEMEIER 2010 or POSPIESZNY 2015), to precise the chronological relationship to the local population (Řivnác culture, GAC respectively).

The relationship of the assumed arriving CW individuals/populations to the local inhabitants of the Řivnác and/or GAC, possible models and the duration of their mutual coexistence will be discussed elsewhere, also in connection with the newly created aDNA analyses of pre- and Early Bronze Age samples from Bohemia, including those of the CW (cf. PAPAC *et al.* 2021).

## Acknowledgements

This study was financially supported by the Czech Academy of Sciences Award Praemium Academiae (M. Ernée) and the institutional programme RVO 67985912 of the Institute of Archaeology of the Czech Academy of Sciences, Prague.

<sup>10</sup> There could be various reasons for the absence of more “standard” finds (i.e., pottery or battle axes) in graves of the early CW. However, in the context of the generally assumed Eastern European origins of the CW, the formal resemblance to the relatively contemporaneous graves of the Pit Grave culture (Yamnaya) in the northern Pontic Steppe is striking at first glance (KAISER 2013, 211–213).

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# The early Corded Ware horizon in the Czech Republic – part Moravia

JAROSLAV PEŠKA

## Abstract

*Compared to Bohemia the situation in Moravia is quite different. The oldest Corded Ware Culture (CWC), that is Find Group I, is quite rare in this region and is represented by finds of A-type battle axes or the Moravian-type battle axe with possible longer survival, which mostly occur as solitary finds. The easternmost evidence for an A-horizon settlement is represented by fragments of ceramic pots with wavy relief ribbon and corded beakers from Olomouc-Slavonín. From Central Moravia we know sporadic grave finds with simple equipment containing corded beakers and bowls. The absence of A-amphorae and of grave assemblages of the early CWC horizon in Moravia attests to gradual and later colonisation of the territory. Similar is the situation with early CWC Find Group II. None of the above find groups represents true evidence of settlement activity, so that we must take into consideration a gradual infiltration into the existing structure of indigenous settlement.*

*More than 90% of the inventory of the Moravian group of Corded Ware Culture (MCWC) belong to domestic development, we know hundreds of grave assemblages from small group cemeteries, originally with burial mounds, with rich domestic ceramic production and many inspirations from the territory of the Carpathian Basin. The first known series of absolute dates documents the presence of local MCWC in the period 2700/2600–2200 BC. Dates from older periods are not available. The inventory of MCWC contains eastern elements, which has analogies in the area of Yamnaya or Catacomb Culture.*

*The main cultural unit in the time of early CWC in Moravia was Jevišovice Culture (JeC), which is mainly known from typical small hilltop sites in SW Moravia, but today also from extensive lowland settlements, solitary graves or maybe small burial grounds begin to appear. Small settlements and one inhumation of a small child from the late phase of JeC in Central Moravia, younger than layer B in Jevišovice and strongly influenced by the Coţofeni and Livezile cultures report absolute dates between 2780–2560 BC. Relatively dense settlement at the end of JeC might be the reason for the absence or only a sporadic occurrence of the oldest and early CWC on the territory of Moravia. In the same period we expect the presence of Globular Amphora, Bošáca and perhaps Makó/Kosihy-Čaka Cultures and at the end with appearance of the mixed horizon Strachotín-Držovice. At the same time we must take into consideration the first signals for the emergent Bell Beaker Culture.*

*West of the Tisza River we can observe approximately a sporadic occurrence of features, which can be associated with Yamnaya Culture. One part of typical elements of the “Yamnaya package” is also identified in princely graves in spectacular burial mounds from the Western Balkans and Dalmatia with an intermingling of influences from the Aegean with domestic local tradition of material culture, other contacts probably reach as far as the Pontic region. Everything points to the fact that Moravia, except the changes at the end of JeC and the arrival of both of the beaker cultures, stood apart from the direct infiltration of people of Yamnaya Culture into the heart of Europe, because the presumed invasion of the territory of JeC by foreign people cannot be directly interlinked with these migrations. Nevertheless, the indirect impact of migration waves induced by the events in North Pontic region to as far as the river Tisza cannot be excluded, either. At this level we cannot say anything more on this problem due to lack of anthropological material and virtually complete absence of palaeogenetic analyses.*

**Key words:** Moravia, Corded Ware Culture, Jevišovice Culture, eastern elements, grave goods



Compared to Bohemia, the situation in Moravia is quite different. The oldest Corded Ware, which is the Find Group I (FG I) according to Buchvaldek's classification, is quite rare in this region and is represented by finds of A-type battle axes or the Moravian-type battle axe (ŠEBELA 1997; KOLÁŘ 2018, Fig. 130) (*Fig. 1*) with possible longer survival (graves, local development: VELEŠOVICE 1988, Gr. 1, Vážany nad Litavou, Gr. 1: ČIŽMÁŘ – GEISLER 1998, Tab. 32:7; ŠEBELA 1999, Pl. 115:2), which mostly occur as solitary finds.

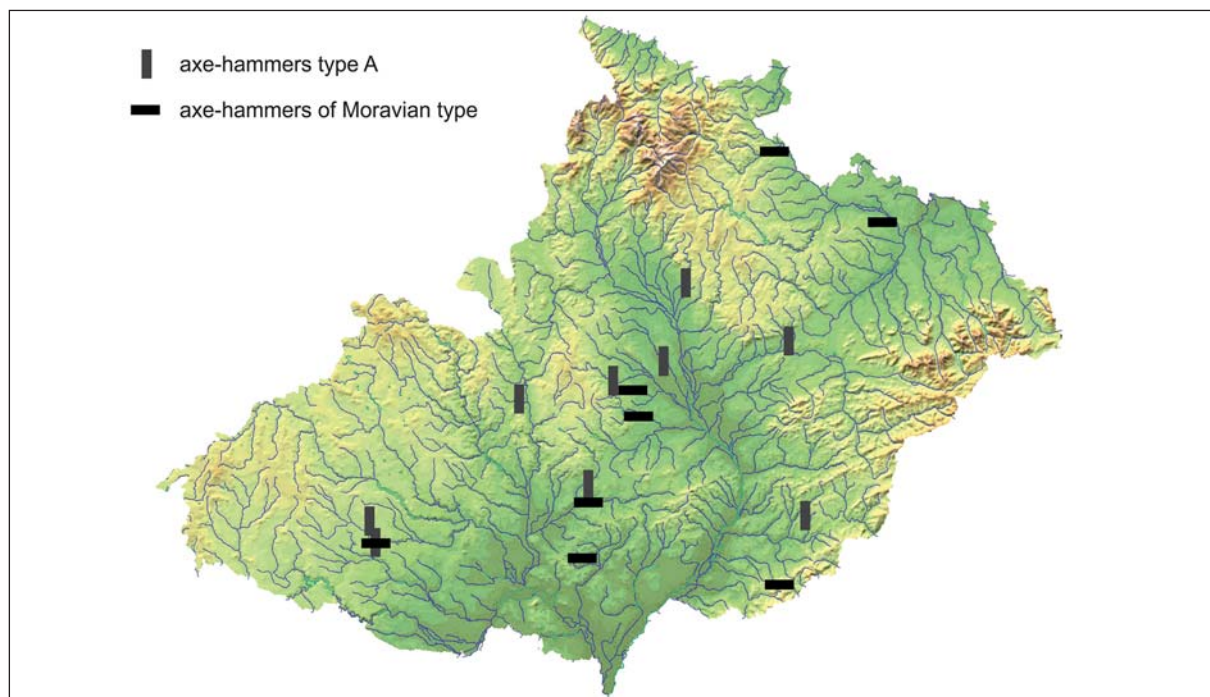
The easternmost evidence for an A-horizon settlement is represented by fragments of ceramic pots with wavy relief ribbon (so-called Wellenleistentöpfe) and corded beakers from Olomouc-Slavonín (*Fig. 2.a; 2.b*), where they occurred as intrusions in chronologically later archaeological features (PEŠKA 1998, Tab. 4:5–7; 2000, obr. 1).

A collection of A-type and Moravian-type battle axes from layer B in Jevišovice (late Jevišovice Culture), including semi-finished blanks referring to local production, deserves special attention. L. ŠEBELA (1997) considers them local imitations (*Fig. 3*).

Nevertheless, they represent important evidence for synchronisation of the Moravian Corded Ware Culture with Jevišovice Culture (JeC). From Central Moravia we know sporadic grave finds with simple equipment containing corded beakers and bowls (Hradisko u Kroměříže III, H1; Němčice nad Hanou: Šebela also adds Hradisko II and Holubice II: ŠEBELA 1999, which BERTEMES – HEYD 2002 classes with Find Group II, or IIIa-late) (*Fig. 4*).

The absence of A-amphorae and of grave assemblages of the early Corded Ware horizon, evidenced by recent excavations in Moravia, attests to gradual and later colonisation of the territory.

Similar is the situation with early CWC Find Group (FG) II, to which probably belongs a settlement with two pits from Palonín, graves from Dub nad Moravou, Hradisko I H1, Hradisko II, H2, Uhřice u Kyjova, burial mounds from Němetice (No. 7 with Silesian battle axe), and a grave from Dětkovice in the Vyškov region containing a faceted battle axe and a copper neck ring, accompanied by an old-fashioned beaker (ŠEBELA 1999, Pl. 79; 75:1–5; 13:1–4). None of the above find groups represents



*Fig. 1. Spatial distribution of axe-hammers of A and Moravian type in Moravia. Map by P. Grenar*

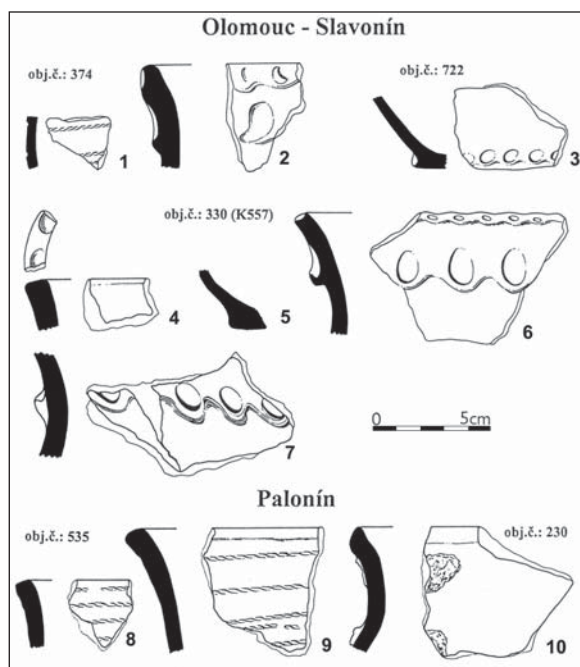


Fig. 2a. Olomouc-Slavonín, Horní lán (Dist. Olomouc). Selection of ceramic fragments so-called A(pan)-European horizon of CWC. After PEŠKA 2000



Fig. 2b. Olomouc-Slavonín, Horní lán (Dist. Olomouc). Ceramic fragments so-called A(pan)-European horizon of CWC (nr. 3 GAC). Photo by M. Bém

(except the B1 type), together with classical Dřevohostice jugs, but also with herring-boned beakers (*Fischgrätenbecher*), which are considered older in the western CWC groups, but in Moravia they fade out during the IIIa phase (Fig. 5). We know hundreds of grave assemblages from small group cemeteries, originally with burial mounds, with rich domestic ceramic production (amphora jugs, derivatives of Dřevohostice jugs, amphorae) and many inspirations from the territory of the Carpathian Basin (types of Balkan and Ökörhalom jugs, egg-shaped pots, Moravian-type bowls, other types of amphorae, etc.). The division of local development into 3 phases IIIa-IIIc according to L. ŠEBELA (1993, 207) has been vividly discussed; the most recent assemblages without corded ware and with predominant Carpathian inventory are not identified with people of the Makó/Kosihy-Čaka Culture (cf. BERTEMES – HEYD 2002 and others), although the ceramic ware and technology are de facto indistinguishable from one another.

The latest excavations repeatedly yielded proof of the existence of agrarian settlements with pits, so far without evidence of dwellings (Olomouc-Slavonín, Horní lán, Vřesovice, Hulín-Pravčice 1) (Figs 6–7).

Also unpublished are so far the first complete settlement areas (settlement + cemetery: Olomouc-Nemilany 3; Prostějov – MUBEA), where the Makó/Kosihy-Čaka (MKC) influence is also very obvious in the settlement component. The number of graves with ring ditches (Holubice VII, Babice u Šternberka, Archlebov) (Fig. 8) is gradually increasing.

Surprising enough is the detection of metallurgists' graves (4× so far); traces of silver (!) were found on the anvil in a male grave from Těšetice near Olomouc (Fig. 9.a; 9.b). The first known series of absolute dates (Fig. 10) documents the presence of local MCWC in the period 2700/2600–2200 BC. Dates from older periods are not available.

The inventory of MCWC contains elements that connect our region with the eastern part of Europe. Besides the Central Moravian specific in the form of internal chamber construction (Fig. 11), we also

true evidence of settlement activity, so that we must take into consideration a gradual infiltration into the existing structure of indigenous settlement.

More than 90% of the grave goods of the Moravian group of Corded Ware Culture (MCWC) belong to domestic development, where graves at the beginning normally contained corded beakers

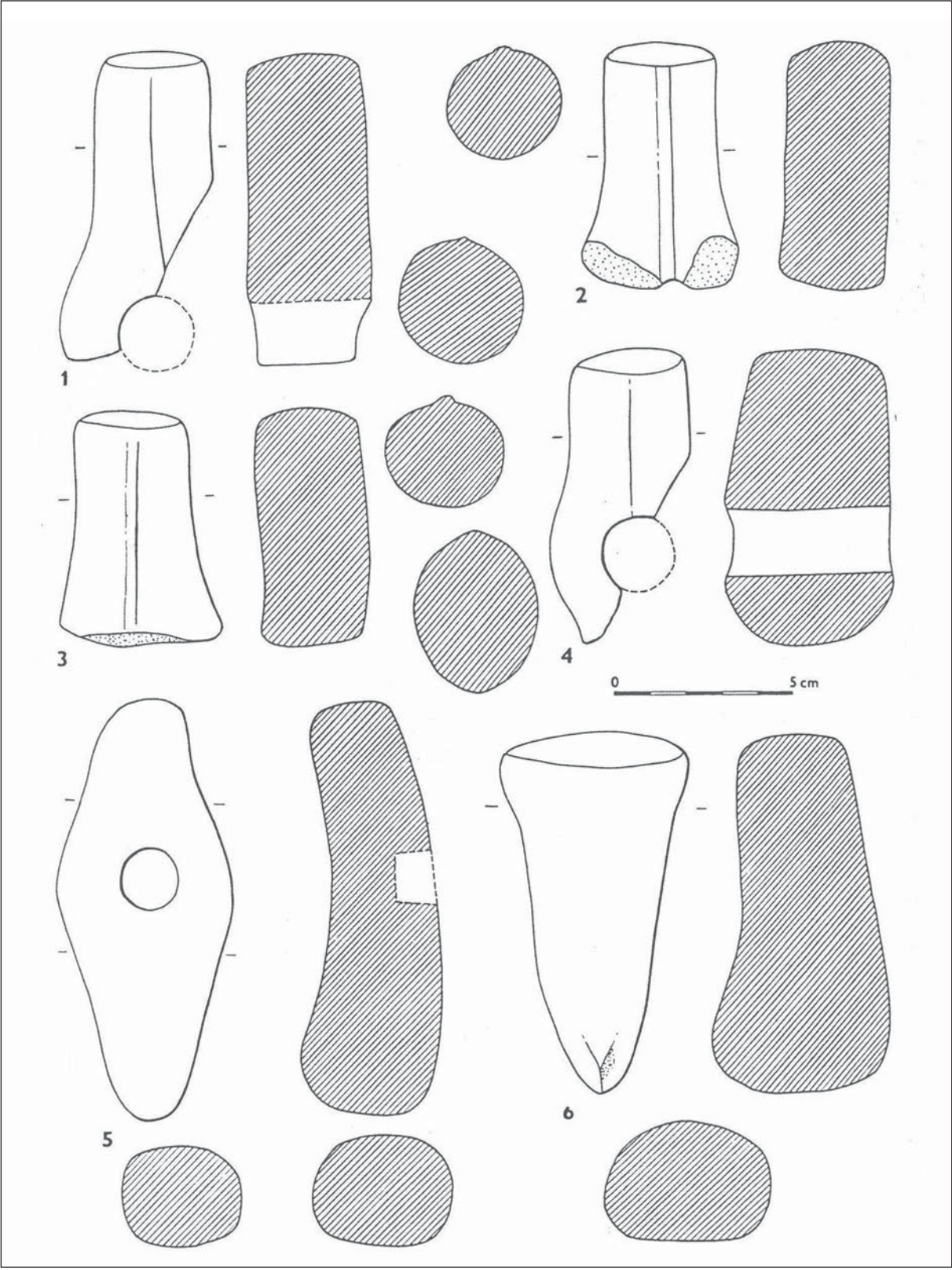


Fig. 3. Jevišovice – Starý zámek (Dist. Znojmo). Selection of axe-hammers of A-type from layer B on hilltop of Jevišovice Culture. After ŠEBELA 1997



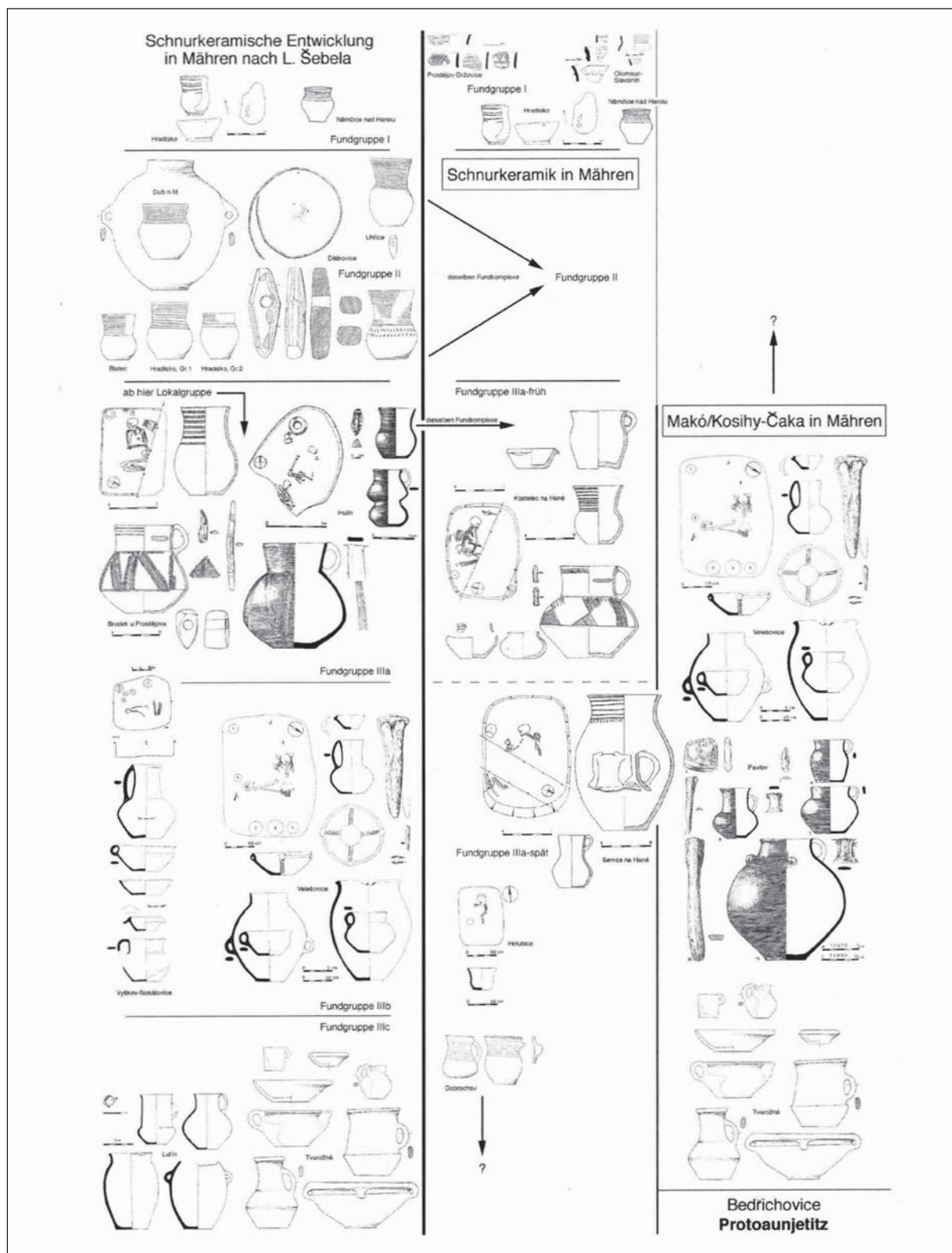


Fig. 4. Relative chronology of cultures of the end of Moravian Eneolithic (CWC, Makó/Kosihy-Čaka, Protoúnětice Culture). After BERTEMES – HEYD 2002



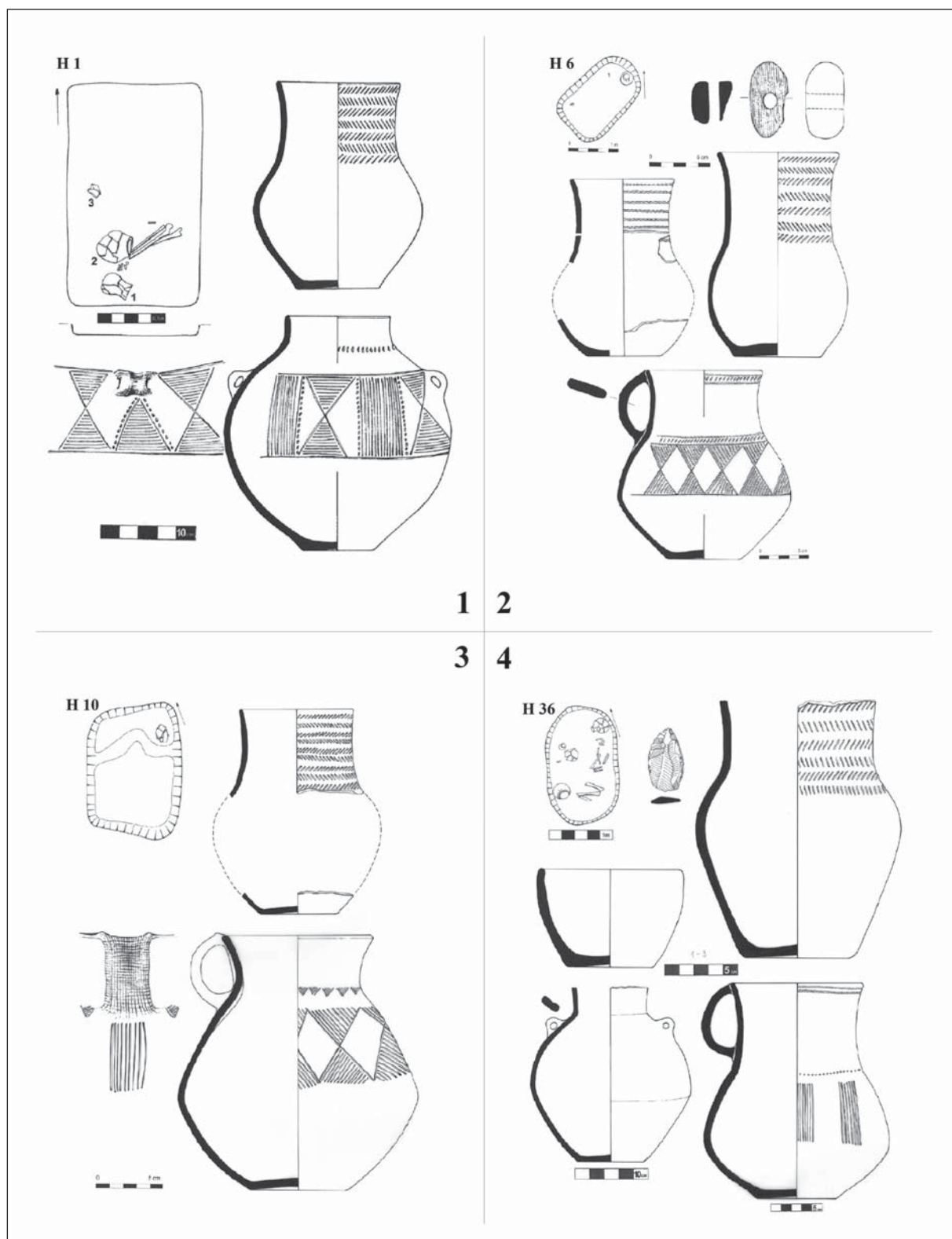


Fig. 5. Inventory of graves of early local phase of MCWC with incidence of “Fischgrätenbecher”.

1. Brodek u Prostějova – Hůrka H 1; 2. Olomouc-Nemilany 3, Pravá k Nedvězí H 6;  
3. Olomouc-Nemilany 3, Pravá k Nedvězí H 10; 4. Olomouc-Nemilany 3, Pravá k Nedvězí H 36.  
Drawing by A. Pešková

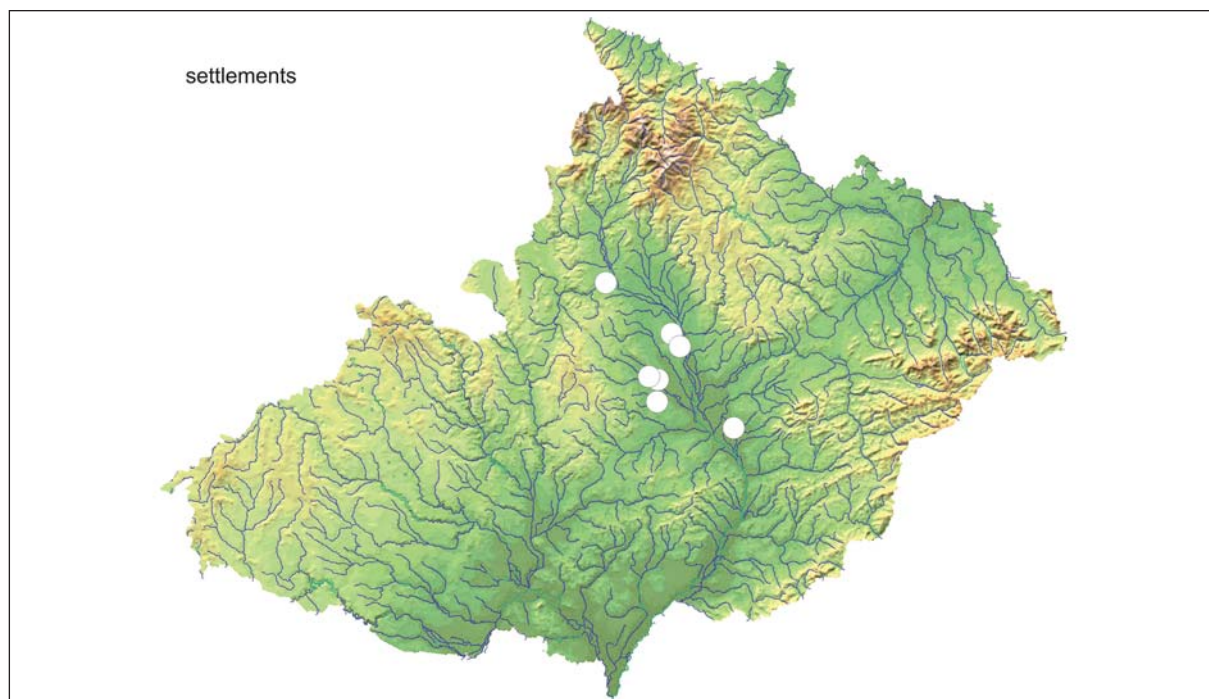


Fig. 6. Present spatial distribution of settlements of local phase of MCWC. Map by P. Grenar

know an interesting whole-perimeter construction of one grave from Olomouc-Slavonín (H 164, Fig. 12), which has analogies, for example, in the area of Yamnaya (Pit-Grave) Culture or Catacomb Culture (BÁTORA 2003, Abb. 9:1; AGULNIKOV 2008, Ris. 2:8; 3:14,15; 2011, Ris. 7:1; 10:1,2; LARINA *et al.* 2008, Ris. 5; 10:1; NIKOLOVA – KAISER 2009, Abb. 9, 17–20; HARAT *et al.* 2014, Ryc. 2.10.4:1; 2.11.4:2; 2.12.4:1; 2.16.4:7; KLOCHKO *et al.* 2015, Fig. 34:II; KALUŽNA-CZAPLIŇSKA *et al.* 2017, Fig. 8:3; REINHOLD *et al.* 2017, Fig. 8.4:1; etc.). The so-called frog position of lower limbs, which is known, for example, from the CWC in Silesia (Kietrz) and Eastern Slovakia (Lesné), from the BBC in Lesser Poland (Sandomierz), but also from Nitra Culture in Slovakia (Jelšovce), Únětice Culture in Moravia (Suchbátka) or in SW Slovakia (Nitra-Dolné Krškany), in Bohemia (Kbely, Cerhenice) and Eastern Germany (Nohra), has direct parallels in graves of the Yamnaya Culture from Hungary (Kétegyháza), Ukraine and Southern Russia. It might be a matter of time until it appears among the archaeological evidence of MCWC.

Interesting finds are represented by two tanged copper daggers from Kroužek 1985 H 2 and from a richly furnished metallurgist's grave from Velešovice I H 1 (Fig. 13).

In comparison to daggers in BBC, they have a slimmer blade and longer tang, so that they strongly remind of daggers from the North Pontic region and Caucasus (HÄUSLER 1974, Taf. 8:7; 15:1; 38:7; 1976, 10:7; 20:3; 37:7, 17; 38:4; BÁTORA 2003, Abb. 7:3; 8:10; KOŠKO 2011, Ryc. 5, 7; MORGUNOVA 2011, Fig. 4:4, 11). Thomas ZIMMERMANN (2007, 57–58) calls them the “Eurasian” type; the nearest Central European analogy we can find is in a grave from Bleckendorf (KIA-162: 4080±20 BP; 2631–2577 cal 1 sigma, 2678–2568 cal 2 sigma BC), where they occur in association with a hammer-headed bone pin (*Hammerkopfnadel*) – a typical product from eastern steppes (MATTHIAS 1968, 9, Taf. 5:17–20; MÜLLER 1999, 80). In Moravia (in contrast to Bohemia), this pin type is not yet known from the CWC but we find it later (Proto-Únětice Culture). Besides other metal artefacts such as two copper blades and one awl, the grave from Velešovice also contained a metalworking kit (two anvils, one hammer), which was analysed

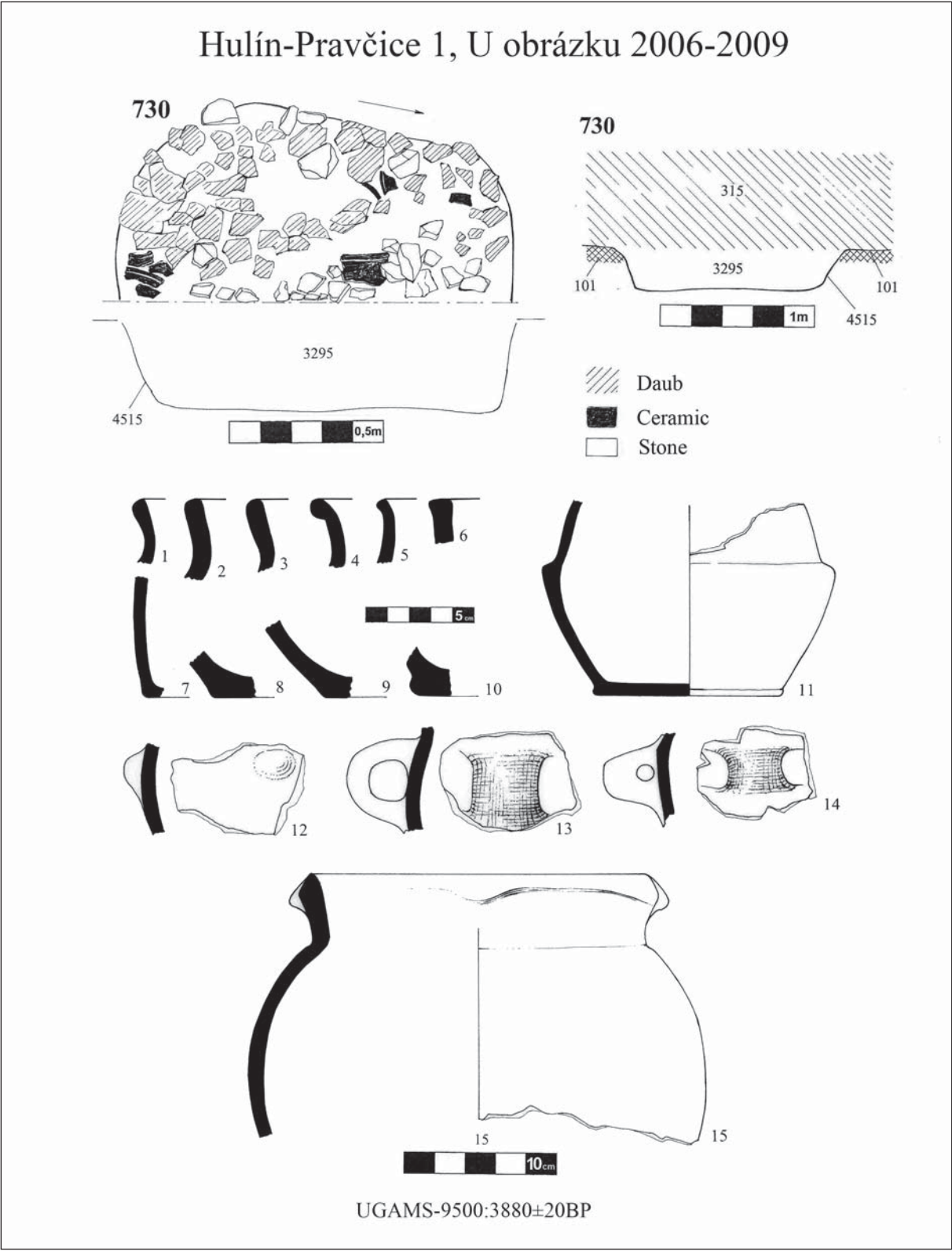


Fig. 7a. Hulín-Pravčice 1, U obrázku 2006–2009 (Dist. Kroměříž). A settlement feature (no. 730) with daub wattle destruction, absolute date and selection of finds. Drawing by A. Pešková

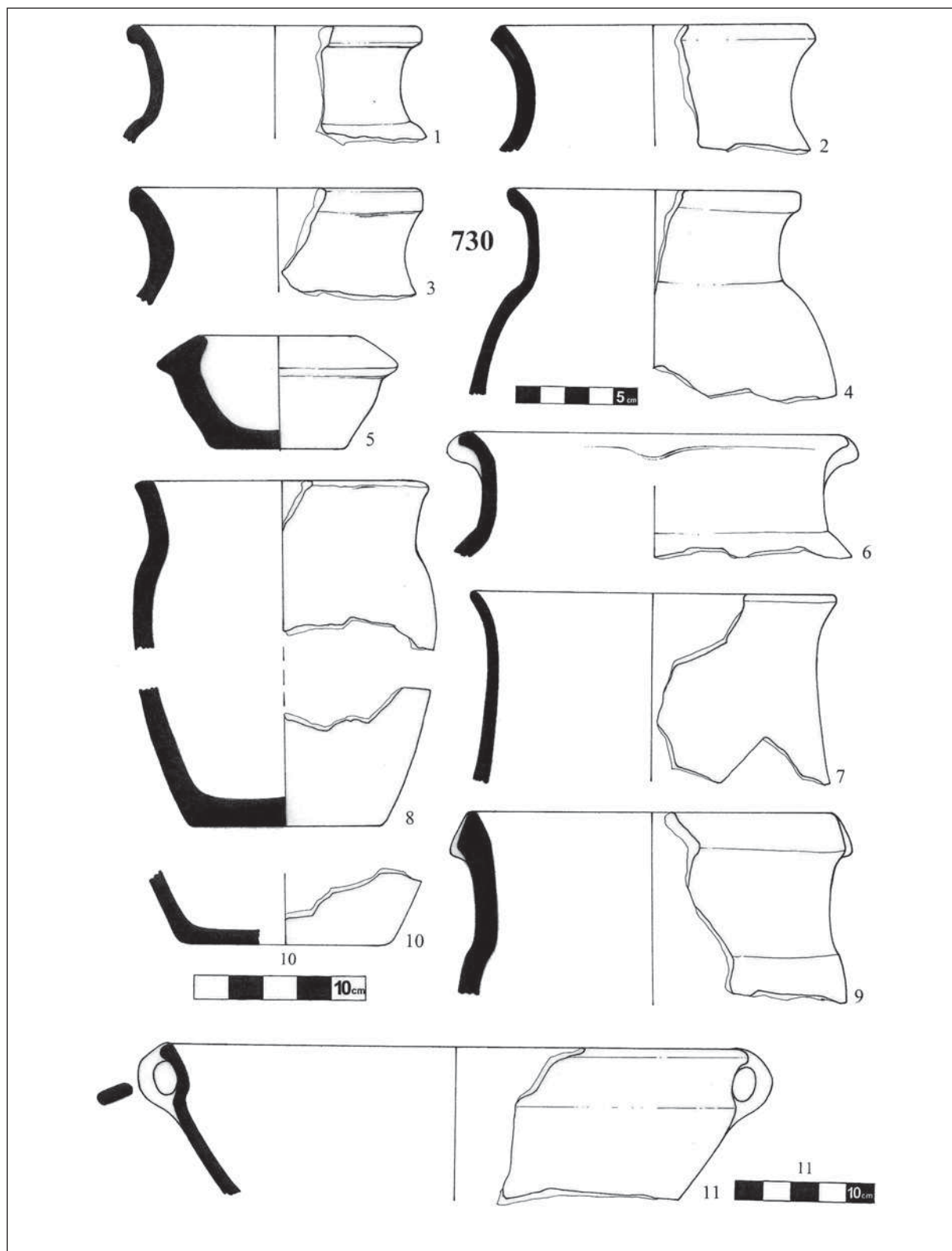


Fig. 7b. Hulín-Pravčice I, U obrázku 2006–2009 (Dist. Kroměříž). A settlement feature (no. 730) with daub wattle destruction, absolute date and selection of finds (continuation)



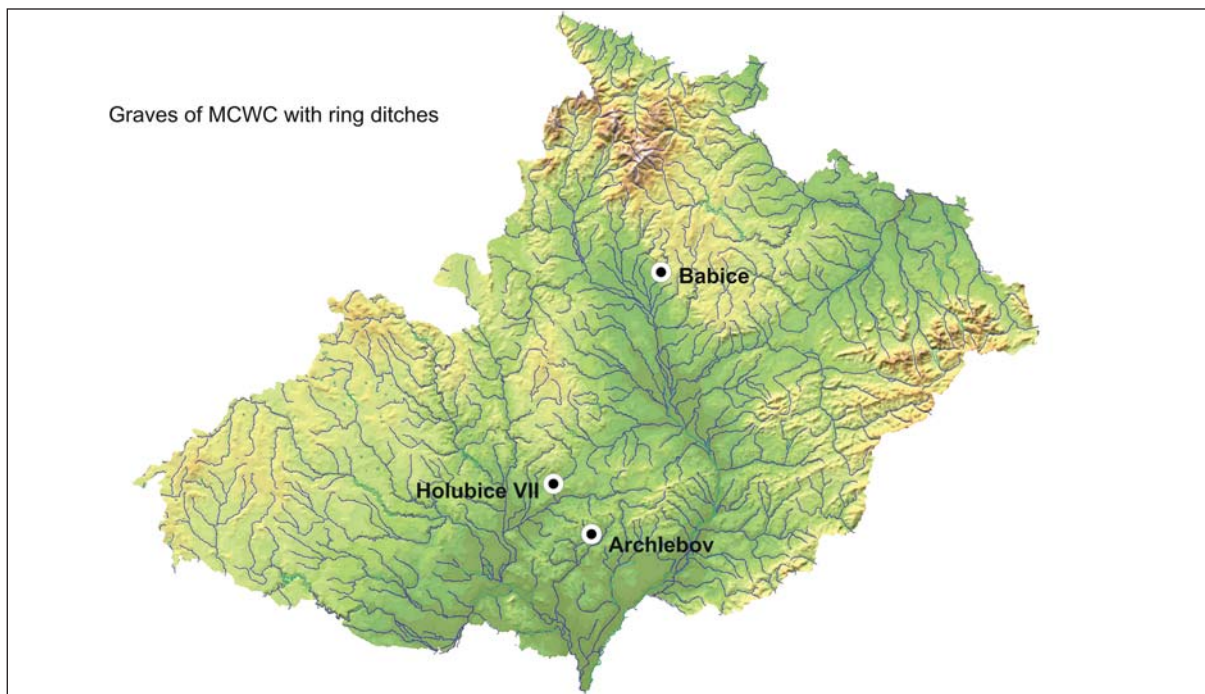


Fig. 8. Spatial distribution of graves of MCWC with ring ditches. Map by P. Grenar

with a SEM microscope with positive results in the form of copper, gold and silver flakes (Fig. 13). All European distribution and a relatively long period of use can be observed with thoroughly worked (sometimes decorated) bone tubes, whose occurrence culminated in the epi-Corded Cultural Complex (EPCC). They were also represented in graves of CWC (Lesser Poland, Bohemia, Moravia, Lower Austria), with original occurrence in Ukraine and in the Baikal region already in the Dnieper-Donets Culture, but mainly in Yamnaya Culture (Volga region, Lower Don) and in the early Catacomb Culture, as well as in settlements on the territory between Volga and Ural rivers (BÁTORA 1999, 36–39; 2009, 246–247; STUCHLIK – STUCHLIKOVÁ 1996, 114–117). This situation can be compared to Moravian finds (grave of MCWC in Držovice with milk and millet, settlement of late JeC in Kroměříž 3 – Miňůvky: KUČERA *et al.* 2018; 2019; PEŠKA 2011) (Figs 14–15).

So, what actually happened in Moravia at the time of early CWC? The break-up of the uniform core of classical Baden Culture, which is represented in Moravia by a not very distinctive settlement horizon (it is a peripheral distribution area), gave rise to many related cultural units in Central Europe. The main cultural unit of that time in Moravia was Jevišovice Culture, which is mainly known from typical small hilltop sites in South-Western Moravia, but today also from extensive lowland settlements (Brno – Starý Lískovec and Nový Lískovec, Bohunice, Modřice) with hundreds of settlement pits, unfortunately only fragmentarily published, but with evident cultural affinity with the area of Ljubljana Marshes in the south (MEDUNOVÁ-BENEŠOVÁ 1977; MEDUNOVÁ-BENEŠOVÁ – VITULA 1994; PŘICHYSTAL 2008; PEŠKA 2011). Solitary graves or maybe small burial grounds begin to appear (Brno-Polní Street, Popůvky: PEŠKA – POLCEROVÁ 2017; unpubl.) (Fig. 16).

Important is the recurrent hoarding of copper artefacts (Brno-Líšeň, Vevčice, Prace) and the first occurrence of shaft-hole axes of Fajsz and Corbasca types with relation to the east. A specific phenomenon is represented by small settlements in Central Moravia (Kroměříž 3 – Miňůvky, Křenovice 2) from the late phase of JeC (PEŠKA 2011), younger than layer B in Jevišovice and strongly influenced by the

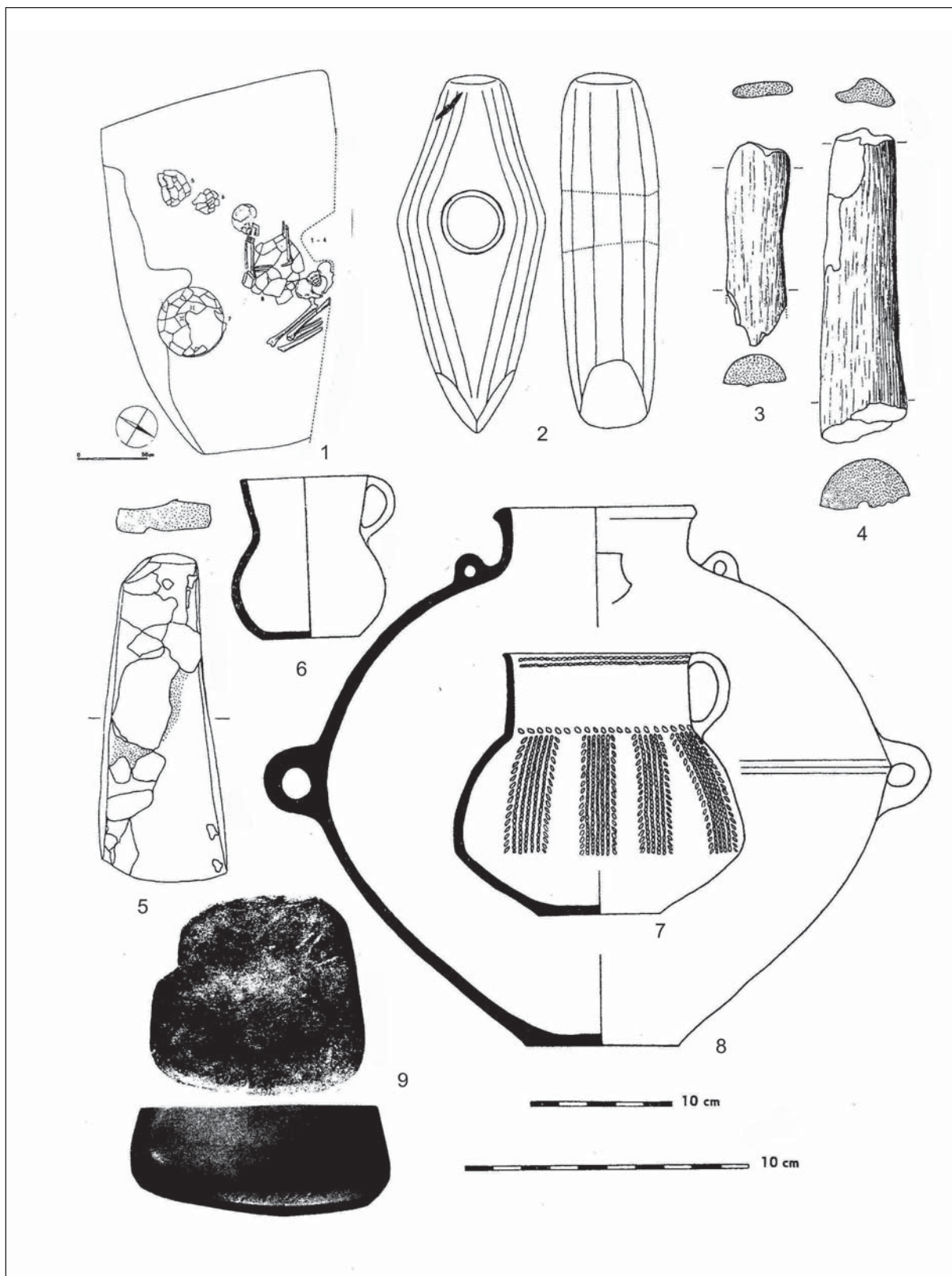


Fig. 9a. Těšetice 1966 (Dist. Olomouc). Inventory of metallurgist's grave.  
After TRŇÁČKOVÁ 1971 and ŠEBELA 1999

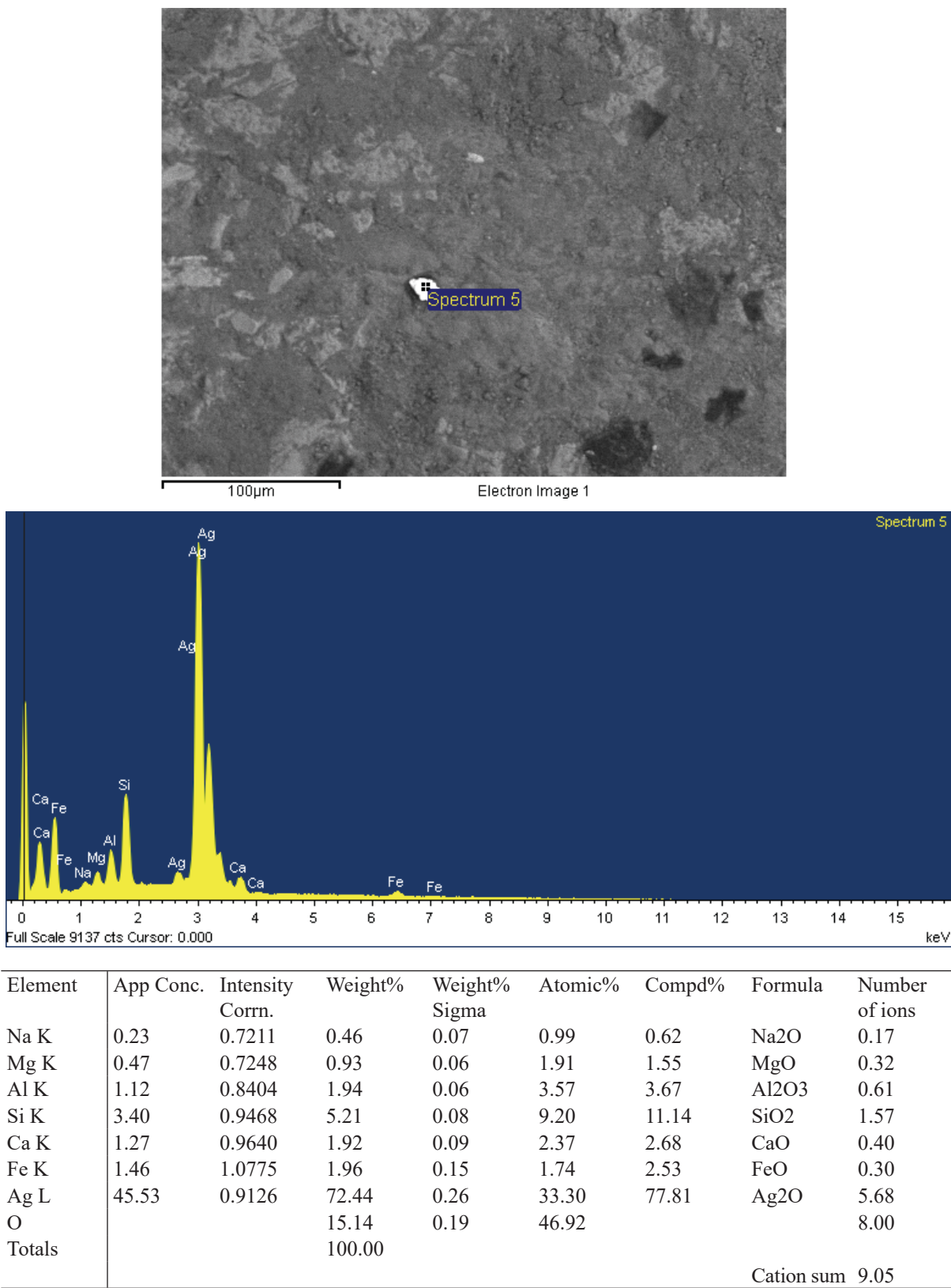
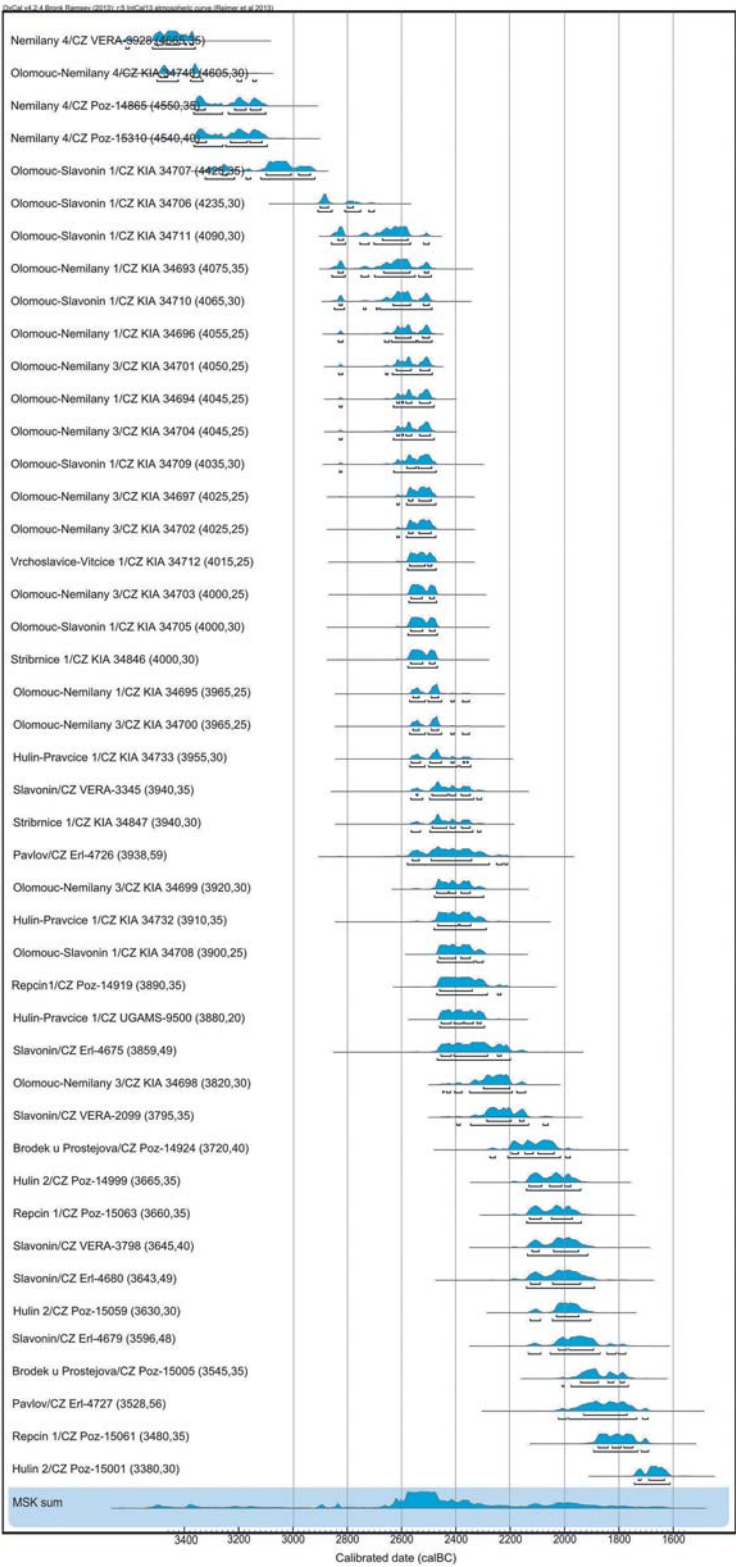


Fig. 9b. Těšetice 1966 (Dist. Olomouc). Results of analysis of Scanning Electron Microscope of anvil from grave of MCWC. Measurement by J. Štelcl





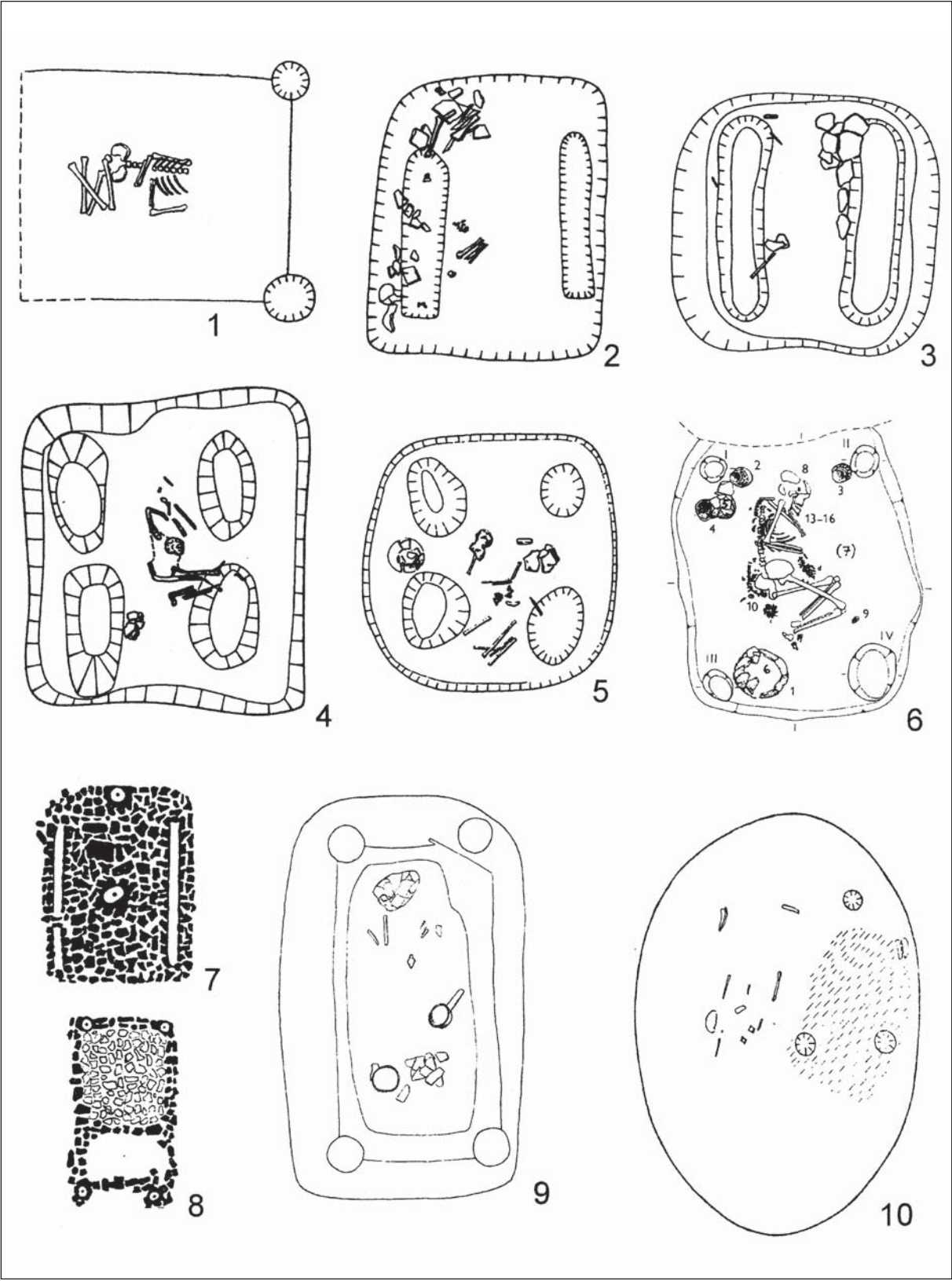


Fig. 11. Graves of CWC with wooden construction. After Kolář et al. 2011

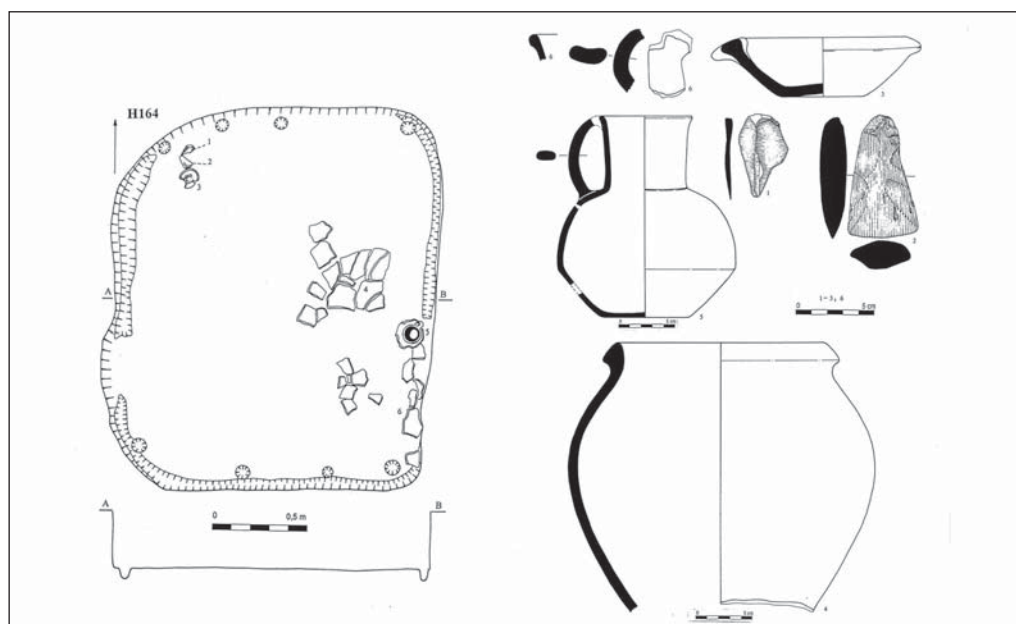


Fig. 12. Olomouc-Slavonín, Horní lán (Dist. Olomouc). Grave 164. A grave of local MCWC with peripheral wooden construction. Drawing by A. Pešková

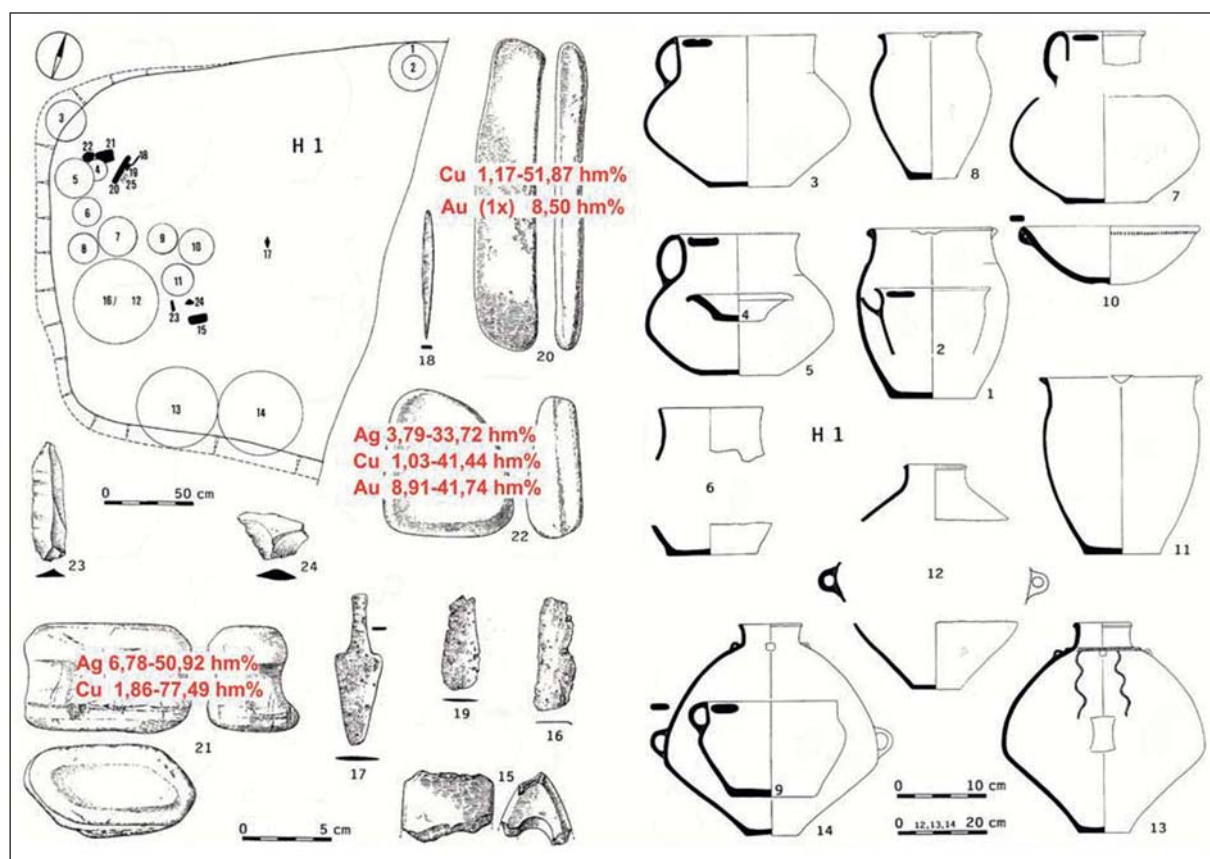


Fig. 13. Velešovice I 1985 (Dist. Vyškov). Grave 1. Symbolic (?) grave with metallurgist's inventory. The results of SEM-analysis show positive metal traces on all stones – parts of metallurgical package. After ČIŽMÁŘ – GEISLER 1998, completed

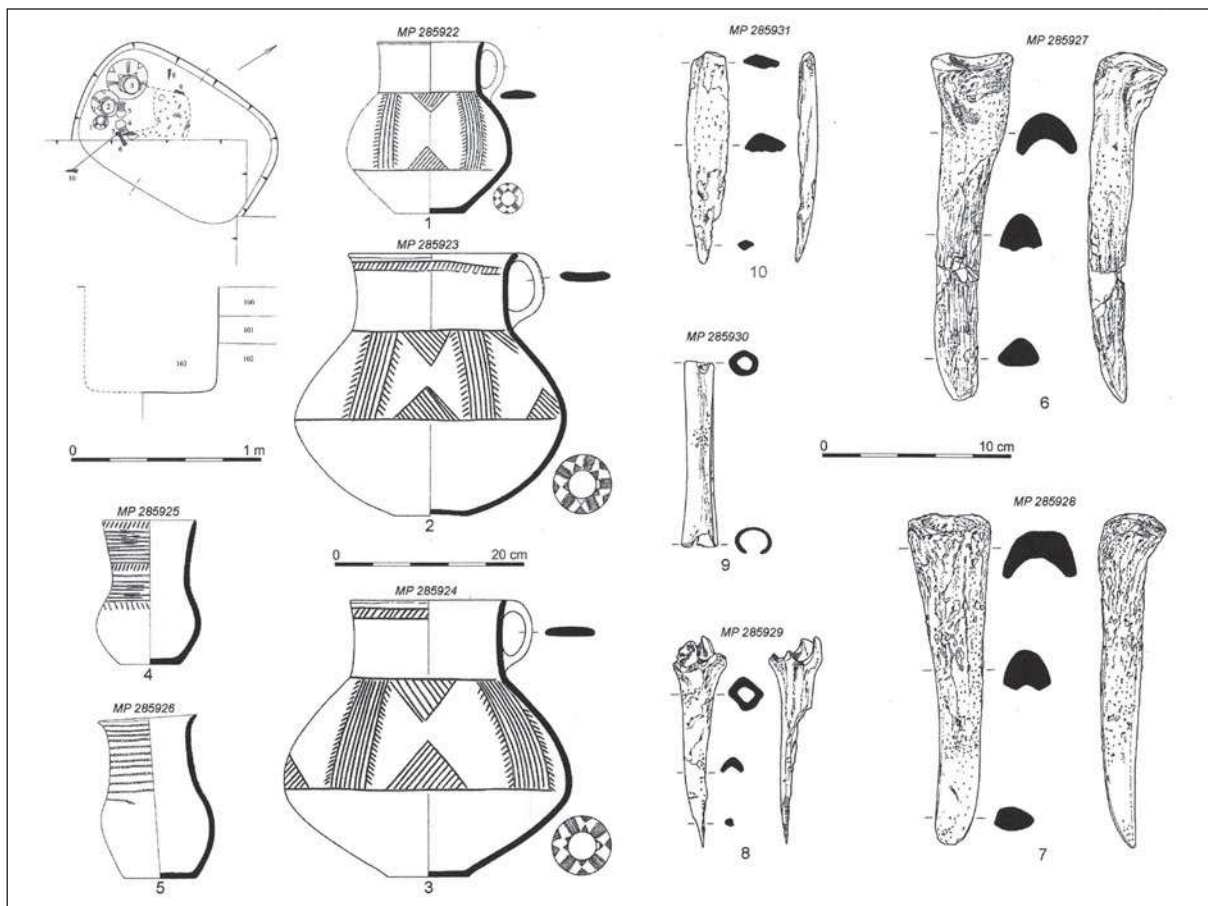


Fig. 14. Držovice – Pastviska (Dist. Prostějov). Grave 4. Grave of MCWC where jugs and beakers contained milk and millet. Drawing by J. Molčíková

Coțofeni and Livezile cultures from Western Transylvania (450 km as the crow flies), where ca. 50% of ceramic material show accordance with the Eastern Carpathian region and yield the same absolute dates between 2780–2560 BC (Fig. 15). To these settlements we also add a specifically equipped inhumation of a small child (Kroměříž 3 – Miňůvky: PEŠKA 2011, obr. 1) in a spacious burial pit containing a bilaterally decorated Ljubljana-type bowl and an askoid jug with exact analogies in the Coțofeni and Livezile cultures (Fig. 17). Another piece of evidence of direct contact might be a polished axe from the so-called Carpathian contact chert, which is otherwise only known from the Apuseni Mountains in immediate neighbourhood of Livezile Culture. The route of movement of one part of population can be followed up through Eastern Slovakia (late Baden Culture: Zemplín, Spiš and Šariš regions: HORVÁTHOVÁ – CHOVANEC 2006), but, for example, also through the material and maybe through a cremation grave in Trebatice in SW Slovakia (PEŠKA – POLCEROVÁ 2017, obr. 12:D). Receptions can be identified as far as in the material of Řivnáč Culture in Central Bohemia (two pots from Denemark: ZÁPOCKÝ – ZÁPOTOCKÁ 2008, obr. 65: 171, 172; Tab. 34:1; 78:2). Important is the fact that all this happened in the period of 3000/2900–2800/2600 BC, which was a time when people of the Yamnaya Culture reached regions deep into Europe. Relatively dense settlements at the end of JeC might be the reason for the absence or only a sporadic occurrence of the oldest and early CWC on the territory of Moravia.

In the north-eastern region of JeC we can find a relatively compact settlement territory of Globular Amphora Culture (GAC). In Moravia and in Czech Silesia we know this culture only in open settlements



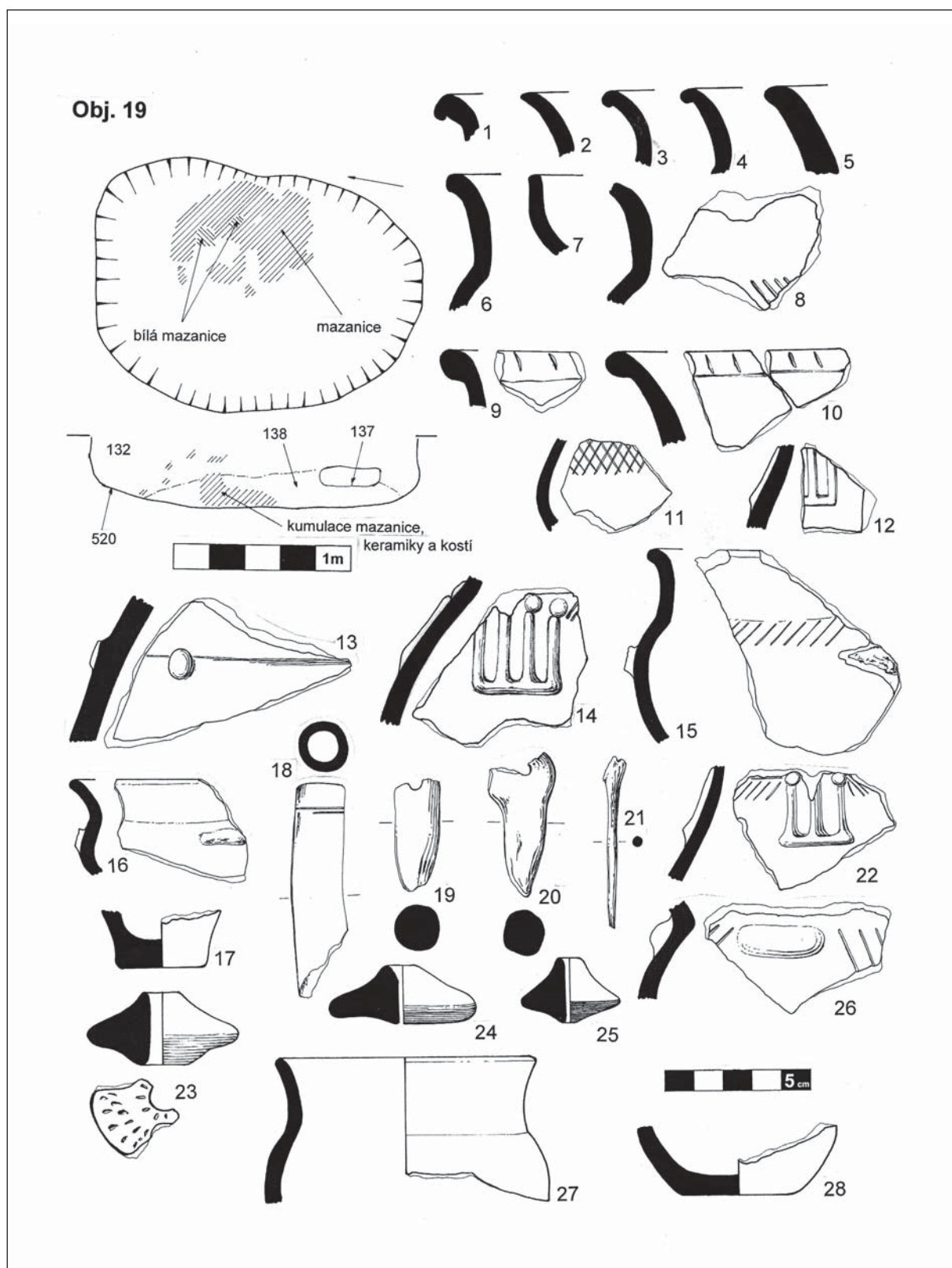


Fig. 15. Kroměříž 3 – Miňůvky, Křivky (Dist. Kroměříž). Feature 19. Selection of materials from final Jevišovice culture (Nr. 18 bone tube). After PEŠKA 2011





*Fig. 16. Popůvky, Pod šípem (Dist. Brno-venkov).  
Vessel of Jevišovice culture from cremation grave.*

*Photo M. Kršková*

from later development phases, which find their closest parallels in the Silesian and Lubulsk regions (they belong to the eastern groups of GAC) in the period of 2900/2800–2700/2600 BC (PEŠKA 2013a). The contact with JeC is mainly evident in hilltop settlements in SW Moravia (Vysočany – Palliardi's hillfort, Jevišovice B). At the turn between the Late and Final Eneolithic, this component is identified as a part of the mixed horizon of Strachotín-Držovice (see below). In SW Slovakia we can follow up the presence of JeC itself (an enclave in the Váh River valley) in the form of Jevišovice pottery in a fortified settlement of the Bošáca Culture (BosC) in Podolie (ŠUTEKOVÁ 2010, Abb. 1, 4). An illustrative example of contemporaneity with GAC is a mixed assemblage of finds of BosC/JeC/GAC from Hajná Nová Ves (WIEDERMANN 2013) (*Fig. 18*).

Bošáca Culture (BosC) with its extensive distribution territory (reaching as far as East Bohemia and Lesser Poland) creates only an indistinct settlement horizon in East Moravia (*Fig. 19*). The material was not yet comprehensively published and the largest hilltop settlement in Bánov is also only fragmentarily

published (PAVELČIK 1964; 1993; 2004; PEŠKA 2013b, 52–64). The brief evaluation of the most recent layer at Hlinsko (ŠEBELA *et al.* 2007, 135–136) did not really contribute to elucidation of the problem either. The source material has not increased in volume in recent years, and absolute dates are missing. We can only say that BosC did not significantly participate in further development.

A problem in Moravia consists of the presence of Makó/Kosihy-Čaka Culture, because, apart from a few settlement pits (Míškovice, Hulín, Mušov) or small settlements (Velké Pavlovice, Vojkovice), it often occurs in the context of other cultural entities (Strachotín-Držovice), and the stray pottery finds are indistinguishable from the local MCWC. This culture is mainly spread in south-eastern Moravia and partly also in Central Moravia (*Fig. 19*).

One part of the archaeological material resembles very much the material from the Carpathian Basin, whereas another part is already specific and differs in no way from the local Corded Ware Culture. In Vojkovice, besides typical Late Eneolithic pottery, a maritime Bell Beaker was also found (*Fig. 20*).

In Bratčice or Přítluky we can record a clear proportion of Bell Beaker Culture (BBC), however, we are not entirely sure whether to class it with MKC, or already with the mixed horizon of Strachotín-Držovice (PEŠKA 2013b, obr. 57–58). Absolute dates are missing, but in Hungary, for example, G. KULCSÁR (2009) dates it generally to 2850/2700–2500/2300 BC, and the latest dates from the so-called Late Makó (Üllő, Domony) are even parallel to the Moravian Proto-Únětice Culture (2300–2130 BC) (KŐVÁRI – PATAY 2005). Regardless of whether we classify the MKC in Moravia as a separate entity or whether we will identify it in the end with local MCWC (the existence of settlements in Moravia is verified), we do not accept the identification of graves of the Late and Final (partly IIIb and c) MCWC

with Makó/Kosihy-Čaka (BERTEMES – HEYD 2002 with further lit.), because they represent the same burial grounds (therefore, biologically clearly MCWC), just with absence of cord-ornamented ware and with a predominance of material (particularly ceramic) inventory of Carpathian origin, which was

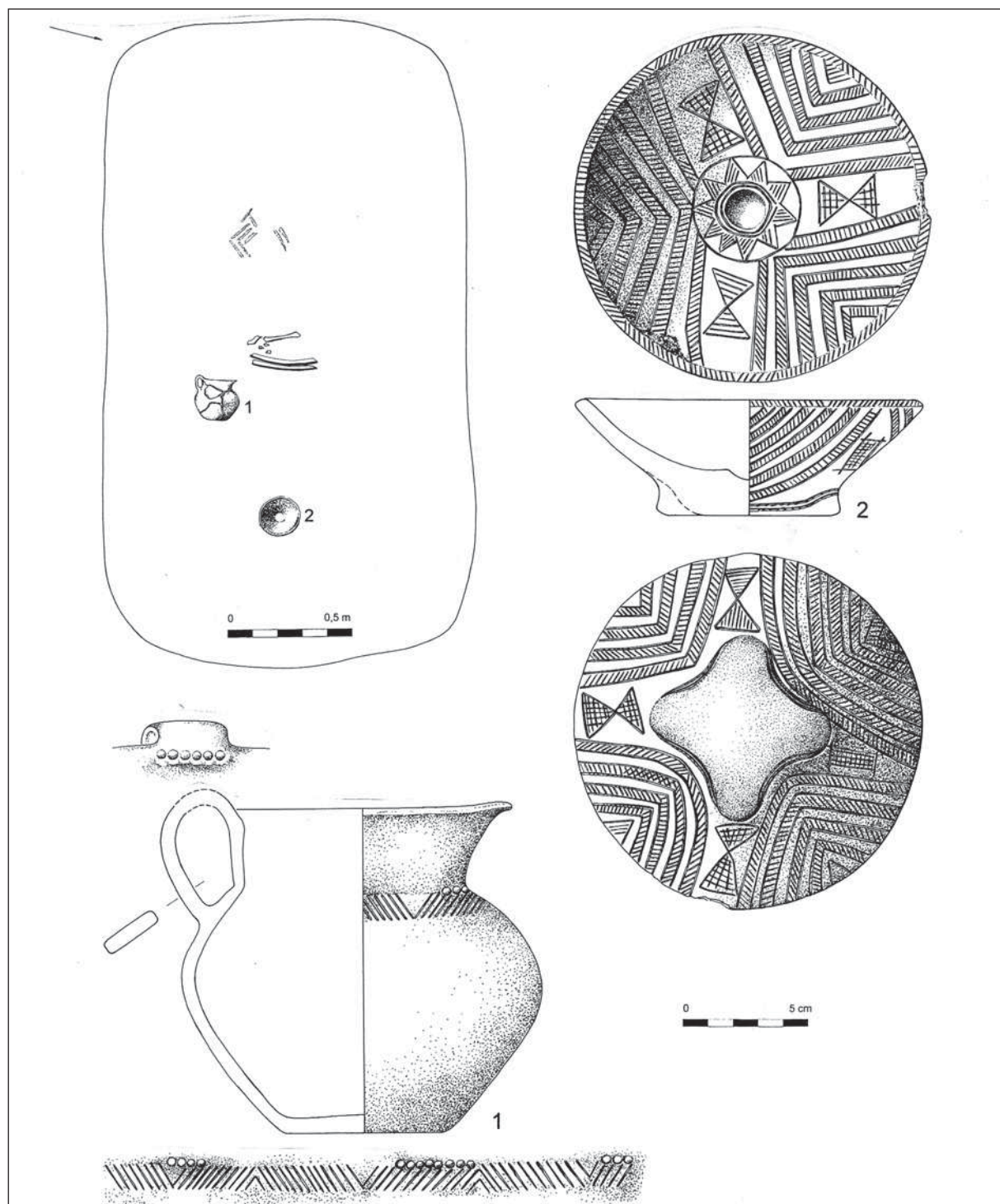


Fig. 17. Kroměříž 3 – Miňůvky, Křivky (Dist. Kroměříž). Grave 1. Grave of small child with Coțofeni/Livezile and Laibacher Moor cultures ceramic. After PEŠKA 2011

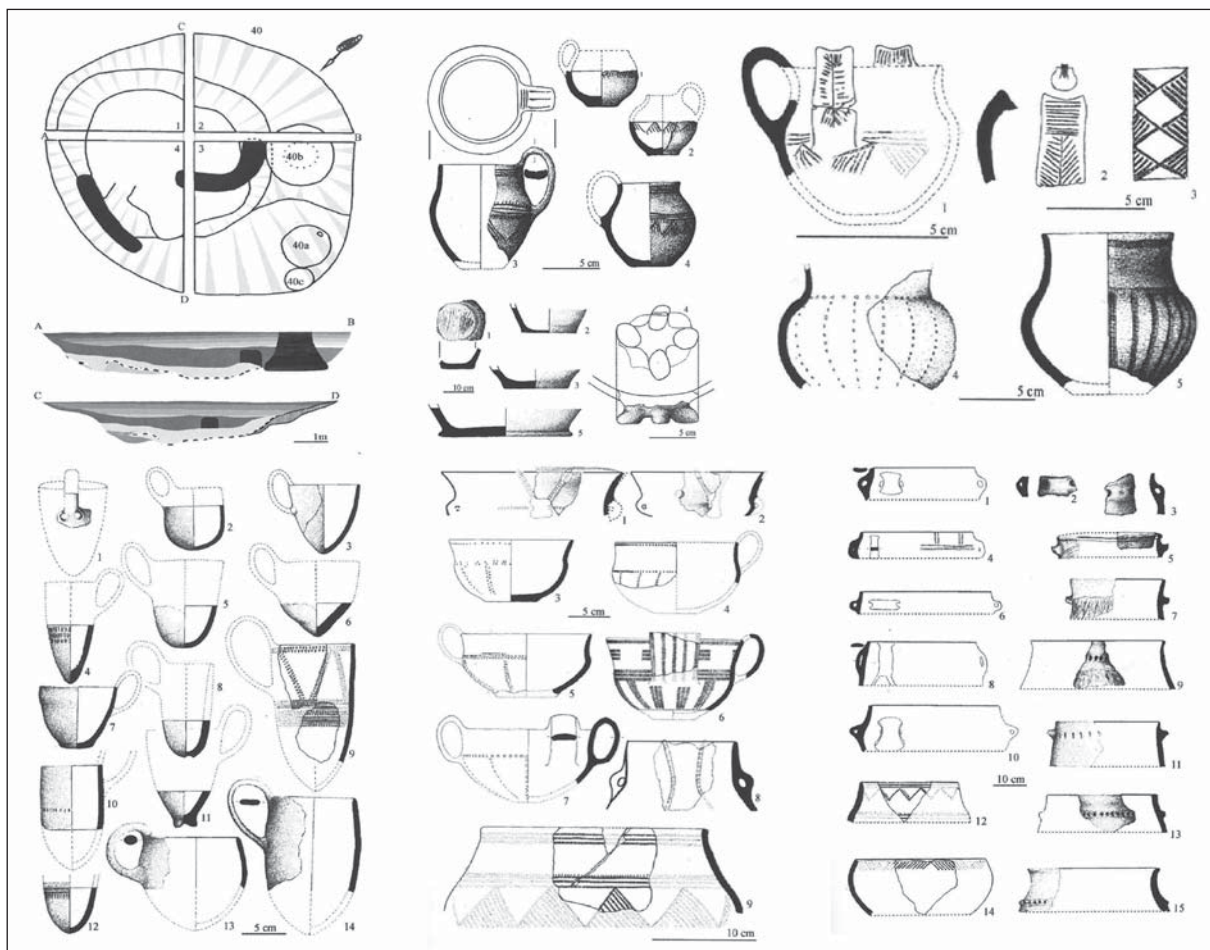


Fig. 18. Hajná Nová Ves, (Dist. Topolčany), Slovakia. Feature 40 with finds of Bošáca Culture, Globular Amphora Culture and Jevišovice Culture. After WIEDERMANN 2013

produced in local conditions. A similar situation is also recorded with Late and Final BBC, where the decorated beakers and bowls have disappeared.

The newly defined mixed horizon of Strachotín-Držovice (PEŠKA 2000, 261; 2013b, 97–103, obr. 58–60) is placed chronologically at the boundary between Late and Final Eneolithic, which is also attested by the first absolute dates: 2600–2450 cal BC (Fig. 21). The southern part (Strachotín) includes a mixture of material of JeC, BosC, MKC and BBC, the “northern” part (Držovice) is represented by a conglomerate of GAC, JeC, MKC and MCWC. Paradoxically enough, the volume of archaeological finds in Central Moravia increases, but still on the same site (Držovice – U hřbitova: FOJTÍK – ŠMÍD 2014); the newly discovered sites in Záhorie region (Gajary-Jazierkové: BÁTORA *et al.* 2003) foreshadow an increasing number of sites and a spatial extension in the future. Chronologically seen, the horizon should fill in the period in which the Late Eneolithic cultures faded out and the Final Eneolithic Beaker cultures were on the rise.

In this period we must take into consideration the first signals of the emergent BBC, which on the one hand becomes part of the above-mentioned mixed horizon and on the other hand begins to manifest itself in a specific way in both settlements and cemeteries. Problems arise with a clear identification of maritime beakers and the beaker set (Find Group I after Dvořák), which occur in graves rather than in settlements. Soon thereafter the completely evolved culture (phenomenon) with implemented beaker



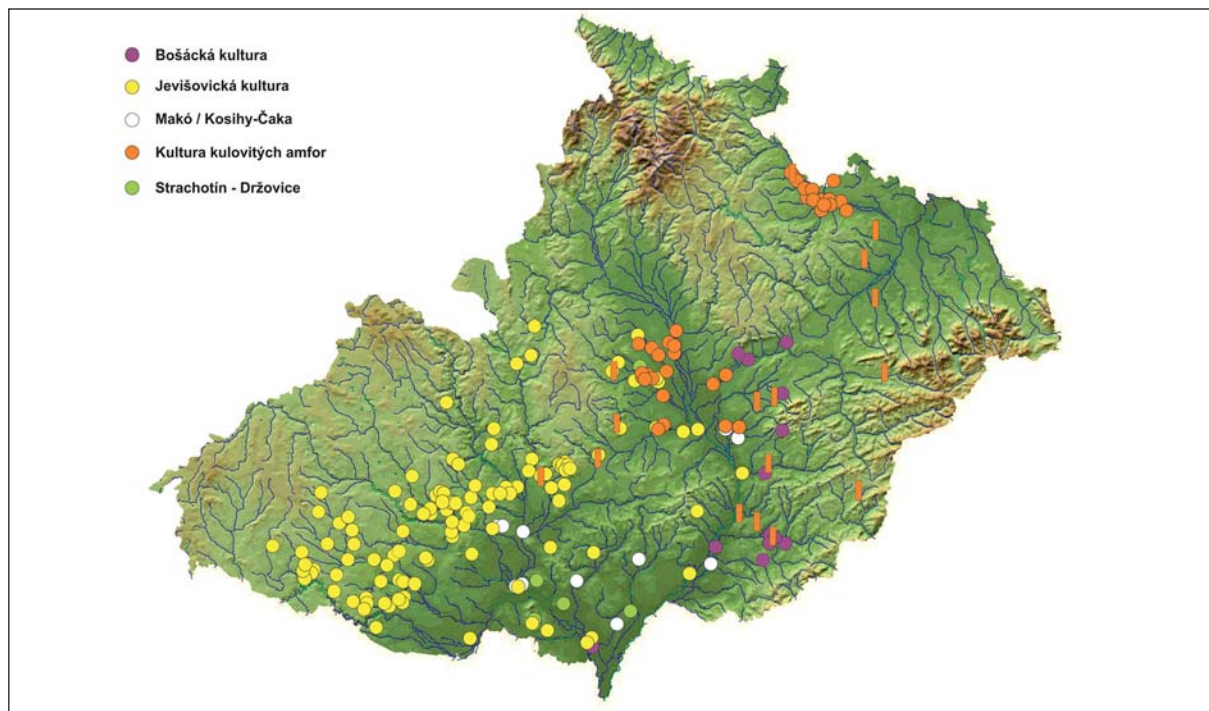


Fig. 19. Map of spatial distribution of Late Eneolithic Cultures in Moravia. Map by P. Grenar

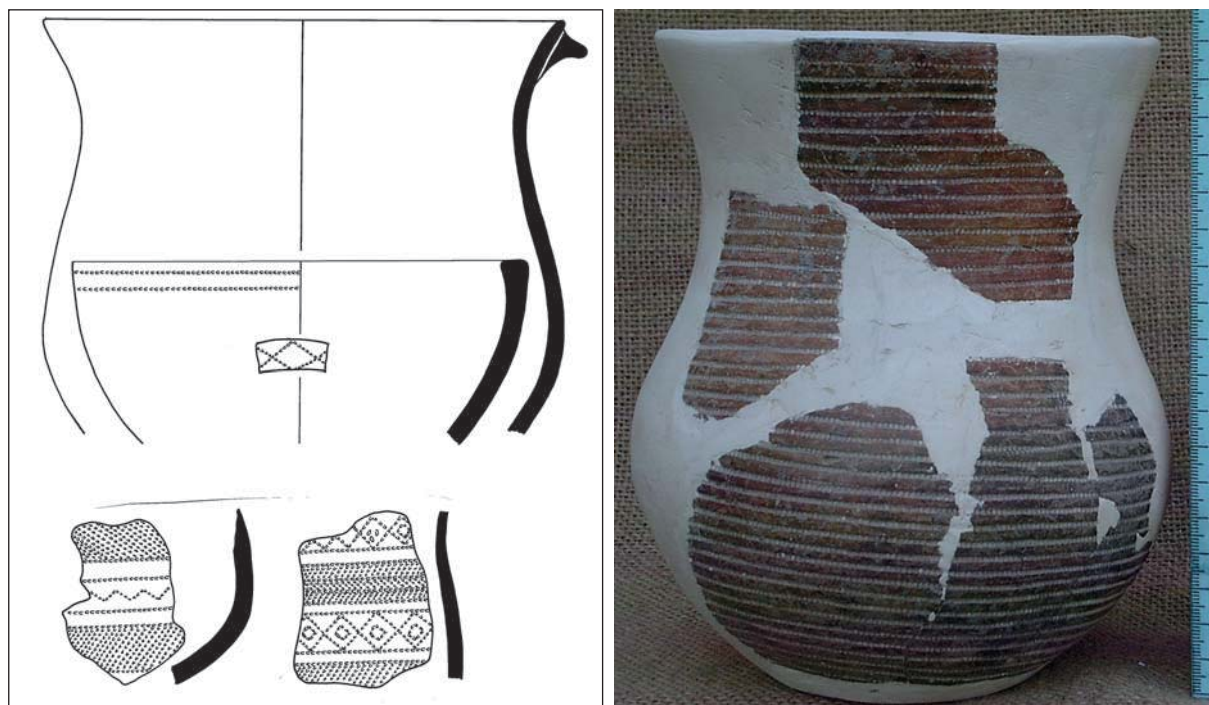


Fig. 20. Vojkovice (Dist. Brno-venkov). Mixed material of Makó/Kosihy-Čaka and the earliest BBC.  
Drawing by A. Matějčková, photo P. Dvořák



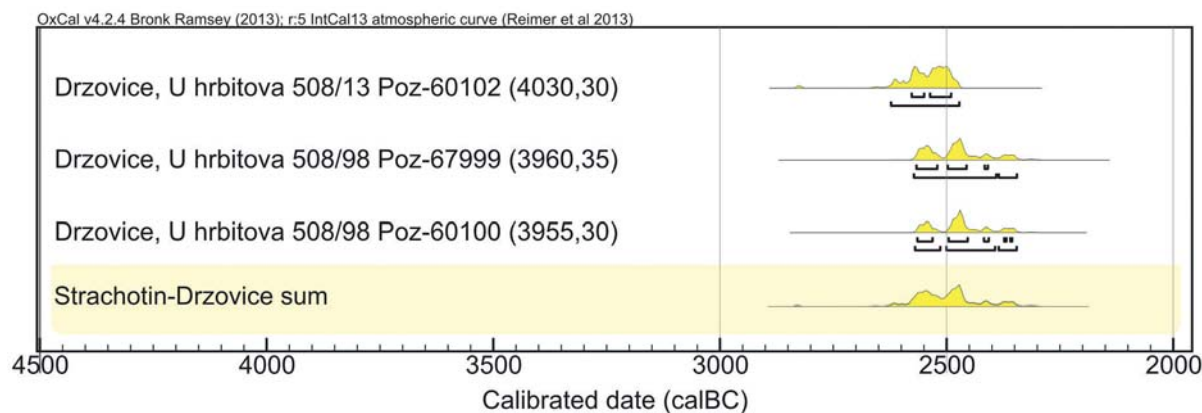


Fig. 21. Overview of present absolute dates of mixed horizon Strachotín-Držovice in Moravia. Graph by P. Grenar

set and with presence of decorated beakers and Nagyrév jugs (Find Group I/II) already appears. In the middle of this culture crystallises the uppermost social class with richly furnished elite graves (men and women partly with male equipment) and a frequent occurrence of richly furnished metallurgists' graves (PEŠKA 2013c; 2016; 2019).

West of the Tisza River we can observe approximately at the same time a sporadic occurrence of features, which can be associated with Yamnaya Culture: burials in Transdanubia (Gönyü; Környe) and Burgenland (Neusiedl am See), light influences in the inventory of Polish CWC (Koniusza, Balice, Święte), or a grave from Vienna-Essling, containing a Manych-type dagger of the North Pontic-Caucasian form (ZIMMERMANN 2003). The dagger is manufactured from copper with increased arsenic content and represents the westernmost find of this type in Europe. The content of the above-mentioned grave from Bleckendorf is generally of eastern origin, and the wagon burials in Central Germany (Profen: FRIEDRICH – HOFFMANN 2013) are also associated with the Eastern European steppe region. However, the question is whether they are not rather related with GAC; the custom of wagon burials is definitely of East European origin.

One part of typical elements of the “Yamnaya package” is, after all, also identified in princely graves in spectacular burial mounds from Western Balkans and Dalmatia, such as Velika Gruda and Mala Gruda, Podgorica-Tološi and Boljevića Gruda with an intermingling of influences from the Aegean with domestic local tradition of material culture (referred to as the Adriatic variant of Vučedol Culture); other contacts probably reach as far as the Pontic region (MARAN 2007; BAKOVIĆ 2011; CIUGUDEAN 2011; GUŠTIN – PRELOŽNIK 2015; GOVEDARICA 2016a; 2016b; 2018; VASILEVA 2017). The first metallurgists appear (Velika Gruda: 3081–2625 BC) and in settlements of Makó Culture we find relics of Caucasian metallurgy connected with metal founding (Zók-Várhegy, Üllő, Vel'ký Meder). We also register the occurrence of hoards and the first types of shaft-hole axes.

Everything points to the fact that Moravia, except for the changes at the end of JeC and the arrival of both of the Beaker cultures, stood apart from the direct arrival of people of Yamnaya Culture into the heart of Europe, because the presumed invasion of the territory of JeC by foreign population cannot be directly interlinked with these migrations (the background must be sought in the area of Coțofeni and Livezile Cultures). Nevertheless, the indirect impact of migration waves, induced by the events in the North Pontic region to as far as the river Tisza cannot be excluded either. In the material culture from the turn of the 4<sup>th</sup> and 3<sup>rd</sup> millennia BC we can follow up some relationships and contacts with Eastern Europe, particularly with North Pontic-Caucasian region, but they rather represent a number of certain phenomena and individual

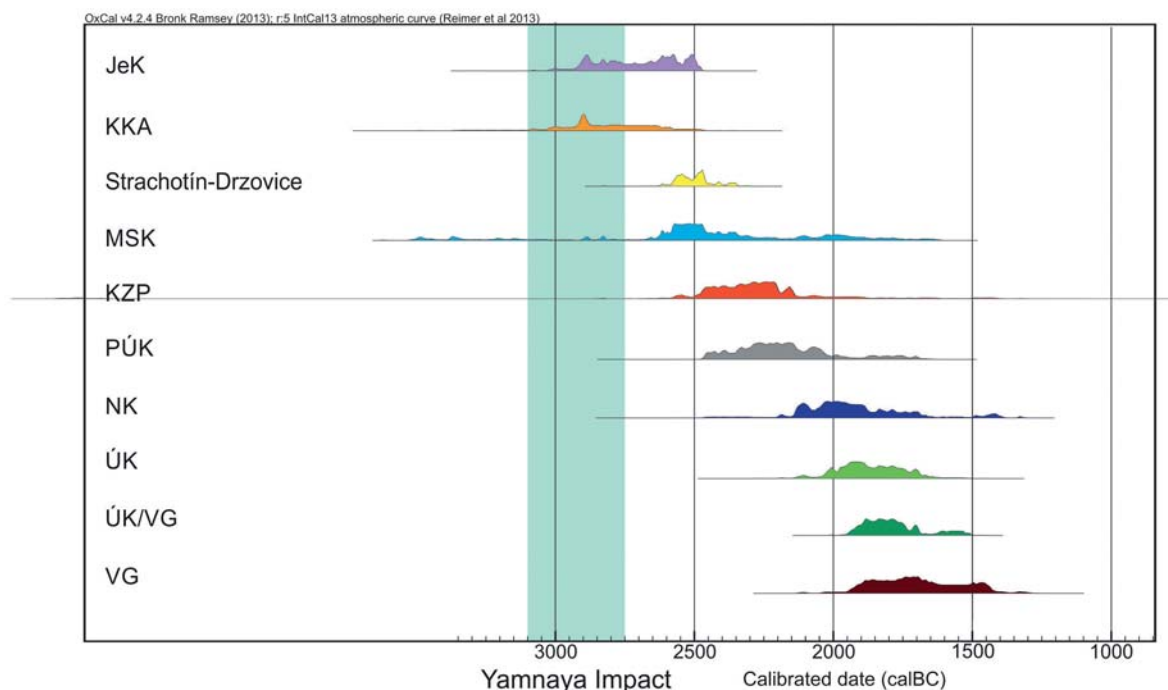


Fig. 22. Sequence of absolute dating of Late and Final Eneolithic Cultures in Moravia with marking of period of impact of Yamnaya Culture to the Central Europe. Graph by P. Grenar

findings. The hitherto known archaeological finds in the form of individual (tumulus) burials and the selection of artefacts indicate the presence of individuals (or small groups) rather than a direct invasion of steppe nomads. In other words, the domestic development in regions to the west of the Tisza River was most probably influenced by progressive commodities included in the Yamnaya package. At this level, we cannot say anything more on this problem due to lack of anthropological material (except the Corded Ware Culture and Bell Beaker Culture) and virtually complete absence of palaeogenetic analyses.

On the basis of the generally accepted absolute chronology, the migration of people of Yamnaya Culture (and other subsequent cultures) should have taken place between 3000 and 2750 BC, which approximately corresponds to the end of classical Baden Culture and the onset of post-Baden cultures in Central Europe. In Moravia it corresponds to the period of duration and fade-out of GAC, BosC and JeC (Fig. 22) virtually until the onset of completely evolved local MCWC with a little later occurrence of BBC.

We cannot rule out that the foreign intervention at the end of JeC in Moravia might not be induced by general changes and movements in southern parts of Central Europe (and that the occurrence of CWC on our territory might not be originally and genetically connected with population shifts in the Yamnaya region), but any direct evidence thereof is not yet available.

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## Interactions epilogue

Two-and-a-half years have passed since the workshop was held in Helsinki. That is an eternity when scientific and particularly ancient DNA results constantly add new perspectives to our understanding. Therefore, instead of doing the usual task of writing a summary of the volume and/or commenting on individual contributions, we decided to highlight four key topics for future research, widely discussed during the two workshop days and emphasized in many papers.

### *tempus fugit*

We are currently accumulating knowledge about Yamnaya and Corded Ware in an unprecedented speed. Big infrastructure measures and their accompanying large-scale rescue excavations are no longer restricted to Central, Northwestern and Northern Europe but all countries of Eastern and Southeastern Europe are catching up. This enlarges our data corpus dramatically. Besides the example of Yamnaya radiocarbon dates given in the introduction, new bio-anthropological data, bio-marker lipid analyses, proteomic and multi-isotopic signatures are being assembled, not to forget ancient DNA samples nowadays screened in their upper hundreds every year. With it comes the problem of the publications of all these kurgans and graves. A good deal of these excavations and their accompanying research is not published and probably will not be for a while. Reliable figures were recently published from Moldova, where from about 1400 excavated kurgans roughly 40% are published (TOPAL *et al.* 2019). The same paper states that figures are in the range of 60% in the Ukraine and while no data is ready available for Romania and Bulgaria; we estimate them to be a good deal higher.

Dealing with cultural complexes/phenomena stretching over thousands of kilometers, like Yamnaya and Corded Wares, and crossing over a dozen of modern countries with different languages and research traditions does not make it easier to follow. It is challenging to keep track even for specialists. Can we cope with this quantity of new information? Things are anyway changing rapidly. What was secure information a year ago, is now in doubt. Even a good deal of findings of the two big *Nature* papers of 2015 (see *Interactions introduction*, p. 7–12 of this volume) are now, after only six years, rather outdated: Not everyone would any longer claim that Corded Ware is a straight descendent of Yamnaya; a transmission across the Carpathian mountains, as indicated by an arrow, can be excluded; and Globular Amphora culture is now also in the game, to name only a few examples. With archaeogenetic projects now focussing in on smaller regions with high resolution of sampling, we are on a way towards greater insights into the complicated cultural, social, ideological and genetic transformations accompanying migrations (PAPAC *et al.* 2021).

Once again, two-and-a-half years have passed since the *Yamnaya Interactions* workshop took place. Papers came in incrementally, some already within the first year, others were only finalized just a couple of weeks before final editing. What is, in consequence, the half-time of this volume and how long will the impact of the contributions last until they become outdated? We will see...

## Redefining cultures in the age of ancient DNA

It is undeniable that the publication of ancient DNA studies triggered new debates about migration in archaeology, and rightly so. The same has just started for prehistoric kinship pattern and will likely

intensify in the next few years in tandem with new ancient DNA results on genetic mating/family patterns from well-studied megaliths, barrows and cemeteries, along the lines of MITTNIK *et al.* 2019, SJÖGREN *et al.* 2020, and ŽEGARAC *et al.* 2021. Archaeology is, for the first time ever in its more than 150 years history, in a position to contribute fresh data to the evolution of kinship systems, that may provide a much needed historical depth to the vast literature on ethnographic kinship studies. But it will demand active comparative research into various types of kinship systems.

A third theme in need of theoretical and methodological elaboration based on the new results from ancient DNA will be our definition of archaeological cultures. The question of “What is Yamnaya and Corded Ware” in the new age of ancient DNA was raised in several discussions during the workshop and is also reflected in many chapters of this volume. While most contributions to the discussion in the past were critical rather than pointing forward, we predict that this theme will expand rapidly. There is already a return to the multi-layered polythetic definition of culture that David Clarke introduced in his opus magnum ‘Analytical Archaeology’ (CLARKE 1968) and this will intensify.

But even without ancient DNA, particularly the definition of Yamnaya remains contested: On the one hand, we have a research history of more than 100 years since the first definition of Yamnaya by V. A. Gorodtsov and while during the course of 20<sup>th</sup> century history, ideology and politics, particularly in Russia and the countries of the former Soviet Union, added constrained interpretations, there is also excellent scholarship to take into account (by, for example, N. Y. Merpert, L. S. Klejn, N. L. Morgunova, N. Shishlina). This should make Yamnaya a well-defined archaeological culture. But then, there is on the other hand the fact that Yamnaya material culture is rather sparse due to a rarity of settlements and peculiarities in the burial customs and, compared to Corded Ware, rather heterogeneous especially when it comes to the pottery. This leave us only with the burial customs to define the basic cultural traits: Usually a large mound; individual burial in pits, often stepped or rectangular with rounded corners; supine body position with flexed originally upright standing legs and grounded feet; orientated west (head)–east; ochre, either straying or deposited in lumps; spare equipment throughout; preparation of the pit with organic materials and coverage with wooden beams. Besides, there are also primary and secondary graves and with these differences in pit forms; different arm positions; slight variation in orientation; equipment exemptions for children; overall lack of women’s graves; occasional stone slabs instead of wood to cover; and here and there a stone stela. These should be acceptable variations and exemptions from the rule. But what to do for those graves and burials that do not display these basics, or just miss one or two of them. So, is a grave in an oval pit still Yamnaya? And without wooden beams and a grave without ochre? Side-crouched body position? A multiple burial of several individuals? Are there Yamnaya flat graves after all? In such cases, ancient DNA can come to the rescue and may give additional information about the levels of steppe ancestry. But what then to do when steppe ancestry is high but the burial customs do not fit. Is this still a Yamnaya burial or not? The opposite may also happen: Missing steppe ancestry but perfect Yamnaya customs... Questions remain and discussions will ensue...

In the end, ancient DNA may well give us another instrument at hand to widen our understanding of what comprises an archaeological culture. By adding a biological component, a more complete scenario could emerge in which Yamnaya, and Corded Ware alike (HAAK *et al.* 2022, in press), might well start from one or several core group(s) of people having the same genetic ancestry, being maybe even related to each other and forming wider kinship groups based on shared DNA. By expanding and moving to new regions they integrate other people of different backgrounds into their group; people who are willing to adhere to aspects of their original lifestyle, ideology and culture. In this process the group enlarges but also diversifies, thus creating the polythetic cultures we recognise, while still preserving some of the core traditions of the original cultural package and transplanting it to regions far away.

### Scales of people migrating

There is still no consensus on the scale of people migrating in 3<sup>rd</sup> millennium BC Europe. This too is reflected in the present volume. While, for example, Johannes Müller in his abstract (p. 47) does not want to recognize (mass) migration in the cases of the Globular Amphorae and Bell Beaker Phenomenon in Central Europe and Martin Furholt rather sees more generally ‘a significant uptick of the spatial extent of prehistoric social mobility’ (p. 57) than larger scale migrations (see also FURHOLT 2021), other contributions still highlight the enhanced role and scale of migrations during the 3<sup>rd</sup> millennium BC. This also includes the paper of one of the co-authors (Heyd) here, in which the term ‘large-scale’ embedded in a ‘more or less constant mobility process’ of several hundred years is strongly advocated (p. 383–414). The other co-author (Kristiansen) has also promoted the perspective of considerable quantities of people on the move, and long distances covered in several of his recent publications, at least when comparing with the early Neolithic migrations (RACIMO *et al.* 2020). A satisfying solution in this dispute is unlikely to be found within archaeology alone. Too contested is the topic of migrations.

Yet, what remains is our limited understanding of prehistoric demography, particularly population sizes and structure, even if bold attempts have been made (MÜLLER 2015). No research is so far able to tell us how many Yamnaya people moved from the north to the west-Pontic regions and into the Carpathian basin, or how many first-generations Corded Ware users arrived, for example, in Bohemia at around 2900 BC as this is at the moment the region for which we possess the best models for the interaction of newcomers and locals (PAPAC *et al.* 2021; see also DOBEŠ *et al.* in this volume, p. 487–512). However, it is not only migrant figures compared to those of recipient societies but also the population dynamics that will play a key role in future models. One rightly has to wonder about the reproduction success and infant survival rates, or the composition of basic social units and their rules, for Yamnaya to sustain cultural and burial coherence while expanding. The same applies for a Corded Ware group like Fatyanovo that colonize the huge lowlands of the upper Volga and middle Volga/lower Kama river basin, covering more than 1400×800 kilometers in extent (NORDQVIST – HEYD 2020; SAAG *et al.* 2021). Gaining quantifiable data is therefore imperative but currently only in early stages when it comes to the archaeology (RACIMO *et al.* 2020). A promising method are calculations for the absolute numbers of Yamnaya burial mounds using modern LIDAR records and Artificial Intelligence for detecting and counting mounds. Combining these data with large-scale geophysics might elucidate numbers of graves/burials which then can to be tested against burial customs and rights for proper burial in society. No doubt, pitfalls remain. But with bio-anthropology, isotopes and even more so, again, ancient DNA we will soon get better projections about how many people were moving.

### Yamnaya and Corded Ware lifeways

A fourth topic discussed during the workshop and also touched in papers of this volume refers to the degree of Yamnaya’s mobile way-of-life. Observing very recent research and publications (i.e., LIBRADO *et al.* 2021; WILKIN *et al.* 2021; and ANTHONY 2021, in press), the tide is currently turning towards giving Yamnaya of the Pontic-Caspian steppes a fully nomadic status and letting them live in wagons, tents and seasonalised camp-sites. They are regarded as cattle breeders and horse keepers, with a generally high protein intake of which milk, including horse milk, is seen to play an important role. This view is certainly in line with their assumed high mobility and distant migrations and does not contradict current ancient DNA results. But to what degree is this perspective valid for the western regions of Yamnaya,



covered in the present volume? Do we have to deal with regional variations? For example, while we still do not know of any Yamnaya settlement site west of the Black Sea, we also lack unambiguous evidence for such a lifestyle from isotopic, bio-anthropological, biomarker lipid, or any other scientific side. We thus only assume their way-of-life to be the same than north of the Black and Caspian Seas but when judging from a neutral point of view we cannot really say.

In contrast, Corded Ware is nowhere to be categorized as nomadic although high levels of socio-economic mobility are also referred to its people. But the same features of wagons, cattle, horse and milk are also attested, and at least for some parts of its huge distribution seasonal mobility including camp sites are also suggested. Obviously, because of a different environment – grass steppe there, temperate forested Europe here – Corded Ware people are not granted the same way of life and economy, even if almost the same parameters apply otherwise. However, no one questions that they retained a strong pastoral component in their economy inherited from the steppe but now integrated into a more mixed farming economy (KRISTIANSEN 2021, in press; HAAK *et al.* 2022, in press).

Again, we should probably envisage regional variation, where some of the mentioned core regions were more fully pastoral than regions with a higher degree of interaction with Neolithic communities. Thus, after 50 years of rescue archaeology in Jutland (Denmark), with large areas uncovered, we have still not been able to document any solid settlement structure from the early and middle phase of the Single Grave Culture in central and western Jutland (SPARREVOHN – KASTHOLM – NIELSEN (eds.) 2019). From botanical pollen evidence we learn that they created the vast heathlands of Northwestern Europe, and they kept them open by regular burning. In this steppe-like environment it was possible to practice a lifestyle much closer to the original Yamnaya economy, with only a small contribution from barley crops and other cereals and pulses. But other regions may have gone very different pathways, and Corded Ware economies in the forests of the Baltic countries, dotted with wetlands and lakes, may well have turned into different directions.

No doubt, we still have a long way to go in order to gain unequivocal understanding here, too.

Göteborg & Helsinki, in October 2021

Kristian Kristiansen – Volker Heyd

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## List of contributors

### **Sorin-Cristian Ailincăi**

Tulcea "Gavrilă Simion" Eco-Museum  
Research Institute  
Str. Progresului, nr. 32,  
820009 Tulcea, Romania  
E-mail: sailincai@gmail.com

### **Stefan Alexandrov**

National Archaeological Institute with Museum  
– Bulgarian Academy of Sciences  
2 Saborna St.,  
1000 Sofia, Bulgaria  
E-mail: stefanalexandrov@abv.bg

### **David Anthony**

Hartwick College, Oneonta  
NY 13820, USA  
Harvard University  
Cambridge MA 02138, USA  
E-mail: anthonyd@hartwick.edu

### **Jozef Bátora**

Institute of Archaeology SAS  
Akademická 2,  
SK-949 21 Nitra, Slovakia  
E-mail: jozef.batora@savba.sk

### **Lorenc Bejko**

Department of Archaeology and  
Heritage Studies  
University of Tirana  
Rruga e Elbasanit 94,  
10100 Tirana, Albania  
E-mail: lorenc.bejko@unitir.edu.al;  
lorenc.bejko@fhf.edu.al

### **Maxime Brami**

Palaeogenetics Group, Johannes Gutenberg  
University Mainz  
Anselm-Franz-von-Bentzel-Weg 7,  
55128 Mainz, Germany  
E-mail: mbrami@uni-mainz.de

### **Mihai Constantinescu**

Faculty of History, Bucharest University  
4-12 Regina Elisabeta Boulevard, Sector 5,  
030018 Bucharest, Romania  
"Francisc I. Rainer" Anthropological  
Research Centre  
Calea 13 Septembrie, nr. 13, Sector 5,  
050711 Bucharest, Romania  
E-mail: mihaic2005@yahoo.com

### **János Dani**

Déri Museum  
Déri tér 1,  
4026 Debrecen, Hungary  
E-mail: dani.janos@derimuzeum.hu

### **Andreea Dima**

IFIN-HH  
Applied Nuclear Physics Department  
RoAMS Laboratory  
30 Reactorului St.,  
077125 Magurele, Ilfov County, Romania  
E-mail: andreea.dima@nipne.ro

### **Miroslav Dobeš**

Institute of Archaeology of the  
Czech Academy of Sciences, Prague  
Letenská 4,  
CZ 118 01, Prague 1, Prague, Czech Republic  
E-mail: dobes@arup.cas.cz

### **Michal Ernée**

Institute of Archaeology of the  
Czech Academy of Sciences, Prague  
Letenská 4,  
CZ 118 01, Prague 1, Prague, Czech Republic  
E-mail: ernee@arup.cas.cz



**Alin Frînculeasa**

Prahova County Museum of History and Archaeology  
Str. Toma Caragiu, nr. 10,  
100042 Ploiești, Romania  
E-mail: alinfranculeasa@yahoo.com

**Martin Furholt**

Institute of Prehistoric and  
Protohistoric Archaeology,  
Christian Albrechts University, Kiel  
Johanna-Mestorf-Strasse 2–6,  
24118 Kiel, Germany  
E-mail: martin.furholt@ufg.uni-kiel.de

**Florin Gogâltan**

Institute of Archaeology and Art History  
Str. M. Kogălniceanu, 12–14,  
400084 Cluj-Napoca, Romania  
E-mail: floringogaltan@gmail.com

**Volker Heyd**

Department of Cultures, University of Helsinki  
Unioninkatu 38,  
00014 Helsinki, Finland  
E-mail: volker.heyd@helsinki.fi

**Elke Kaiser**

Institute for Prehistoric Archaeology  
Free-University of Berlin  
Fabeckstr. 23–25,  
14195 Berlin, Germany  
E-mail: elke.kaiser@topoi.org

**Aivar Kriiska**

Department of Archaeology,  
Institute of History and Archaeology,  
University of Tartu  
Jakobi 2,  
51005 Tartu, Estonia  
E-mail: aivar.kriiska@ut.ee

**Kristian Kristiansen**

Department of Historical Studies  
University of Gothenburg  
Renströmsgatan 6,  
41255 Göteborg, Sweden  
E-mail: kristian.kristiansen@archaeology.gu.se

**Gabriella Kulcsár**

Institute of Archaeology,  
Research Centre for the Humanities  
Tóth Kálmán u. 4,  
1097 Budapest, Hungary  
E-mail: kulcsar.gabriella@abtk.hu

**Cristian Micu**

Tulcea”Gavrilă Simion” Eco-Museum  
Research Institute  
Str. Progresului, nr. 32,  
820009 Tulcea, Romania  
E-mail: cristianmicu72@gmail.com

**Florian Mihail**

Tulcea”Gavrilă Simion” Eco-Museum  
Research Institute  
Str. Progresului, nr. 32,  
820009 Tulcea, Romania  
E-mail: florianhamangia@yahoo.com

**Marian Mocanu**

Tulcea”Gavrilă Simion” Eco-Museum  
Research Institute  
Str. Progresului, nr. 32,  
820009 Tulcea, Romania  
E-mail: marian1054@yahoo.com

**Johannes Müller**

Institute of Prehistoric and  
Protohistoric Archaeology,  
Christian Albrechts University, Kiel  
Johanna-Mestorf-Straße 2–6,  
24118 Kiel, Germany  
E-mail: johannes.mueller@ufg.uni-kiel.de

**Kerkko Nordqvist**

Department of Cultures, University of Helsinki  
Unioninkatu 38,  
00014 Helsinki, Finland  
E-mail: kerkko.nordqvist@helsinki.fi

**Monika Pecinovská**

Institute of Archaeology of the  
Czech Academy of Sciences, Prague  
Letenská 4,  
118 01, Prague 1, Prague, Czech Republic  
E-mail: pecinovska@arup.cas.cz

**Jaroslav Peška**

Archaeological Centre Olomouc  
p. o. U Hradiska 42/6,  
779 00 Olomouc, Czech Republic  
E-mail: peska@ac-olomouc.cz

**Bianca Preda-Bălănică**

Department of Cultures, University of Helsinki  
P.O. Box 4 (Fabianinkatu 24, 121C),  
00014 Helsinki, Finland  
E-mail: bianca.preda@helsinki.fi

**Gabriela Sava**

IFIN-HH  
Applied Nuclear Physics Department  
RoAMS Laboratory  
30 Reactorului St.,  
077125 Magurele, Ilfov County, Romania  
E-mail: gabriela.sava@nipne.ro

**Aurel-Daniel Stănică**

Tulcea “Gavrilă Simion” Eco-Museum  
Research Institute  
Str. Progresului, nr. 32,  
820009 Tulcea, Romania  
E-mail: aurelstanica@gmail.com

**Marzena Szmyt**

Faculty of Archaeology,  
Adam Mickiewicz University  
ul. Uniwersytetu Poznańskiego 7,  
61-614 Poznań, Poland  
Archaeological Museum in Poznań,  
ul. Wodna 27,  
61-781 Poznań, Poland  
ORCID 0000-0002-5975-4494  
E-mail: marzena@amu.edu.pl

**Martin Trautmann**

A und O – Anthropologie und Osteoarchäologie  
Dall’Armistraße 16,  
80638 München, Germany  
E-mail: ao.anthropologie@googlemail.com

**Piotr Włodarczak**

Institute of Archaeology and Ethnology,  
Polish Academy of Sciences  
Centre for Mountains and Uplands Archaeology  
Ślawkowska st. 17,  
31-016 Kraków, Poland  
E-mail: wlodarczak.piotr@gmail.com





*Yamnaya Interactions* brings together 20 contributions by 32 scholars, from 12 different countries. In latest research, these proceedings of the April 2019 Helsinki workshop document the pathways of Yamnaya and Corded Ware people to the west, and their multifold contacts with local societies both north and south of the Carpathians around and after 3000 BC. The book offers the latest understanding of the geographical extent, chronology and consequences of events, while also demonstrating both international and regional perspectives on burial customs and material culture.



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THE YAMNAYA IMPACT ON PREHISTORIC EUROPE